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Original Contributions.

PROPOSED NEW METHOD FOR TREATING WOUNDS IN THE MOUTH.

By E. Lawley-York, D.D.S., Berlin, Germany. Read Before the St. Louis Dental Society, March 5, 1901.

About three years ago I made the statement, during a discussion of the requirements of a perfect mouth-wash before the Chicago Dental Society, that in a mouth the secretions of which were acid a large number of microorganisms would not so readily proliferate, and that the constant use of an alkaline mouth-wash might so alter the condition of the saliva that microorganisms would be more likely to grow there, yet at the same time I do not for a moment recommend such a course, as the continued use of an acid wash would be most deleterious to the teeth. This statement was recalled to me upon reading an article by Dr. W. H. G. Logan (Dental Digest, Dec. 1900, p. 885), in which he relates some experiments conducted by him in the mouths of dogs, whereby he says he has so altered the condition of the secretions of the mouth, from an ordinarily alkaline or neutral to a decidedly acid one, that the growth of the pyogenic bacteria has been entirely retarded.

The wisdom of this teaching I challenge, not in an unfriendly manner, but in the interests of the dental profession. Having done considerable experimental work myself, and having noted the immense amount of work that is prematurely given to the dental profession before being thoroughly tested and revised, I am thereby prompted to open up this matter. The object of the essayist was, if I properly understand him, to make the secretions of the mouth sufficiently acid to retard or altogether prevent the proliferation of any pyogenic bacteria that might be in the mouth. *Test I.* Two dogs, having freshly made wounds in the mouth, were treated as follows: The surface of the wounds was dusted with powdered acetate of potassium, with the idea that the salt would decompose

and thereby leave liberated acetic acid on the wound surface. *Test II.* Two dogs having similar wounds in the cheek were treated in the following manner: The wounds were dusted with the Bacillus Acidi Lactici in sugar for the purpose of having ever present over the wound surface a slight acid secretion; sugar was used with this bacterium merely to dilute it. *Test III.* On the surface of similar wounds in the mouths of other dogs oxychlorin was dusted over the parts with the hope of having oxygen liberated constantly on the wound surface, which would prevent the development of bacteria.

Test IV. Like wounds in depth and length made in other dogs' mouths were infected with a virulent culture of Staphylococcus Pyogenes Aureus. The results, as tabulated by the essayist, were as follows: Simple wounds treated with potassium acetate healed in nine or ten days. Simple wounds treated with Bacillus Acidi Lactici and sugar healed in eleven days. Simple wounds treated with oxychlorin healed in nine and ten days. Simple wounds infected with a virulent culture of the Staphylococcus Pyogenes Aureus, some hours being allowed to elapse before treatment (no time stated), gave the following results: Under oxychlorin infection controlled in seventeen days. Under potassium acetate infection controlled in fourteen days. Under Bacillus Acidi Lactici and sugar infection controlled in seventeen days.

In regard to test I, in which wounds were treated with powdered potassium acetate and healed in nine and ten days—inasmuch as control experiments were not made in the mouths of other dogs, or of the same dogs, some being left entirely alone and others merely treated with cleanliness and antiseptics, it is not possible to say what part, if any, the action of the potassium may have had in bringing about the healing process, or whether it may not actually have retarded it.

In test II, in which wounds made in the mouths of dogs were dusted with the Bacillus Acidi Lactici in sugar, this bacterium is able to produce acid in the presence of milk sugar and other carbohydrates. The sugar used would soon be dissolved and washed away, and I doubt if it could be relied upon in any case to keep up a constant acid reaction on the surface of the wound. Again, many bacteria will not tolerate desiccation and still retain their vitality, so that unless tests were made to ascertain if this particu-

lar organism would tolerate such treatment, and also tests to see if it were present upon the wound surface, it could not be said with any degree of certainty that a growth had taken place, nor is it stated that any tests were made to determine whether the secretions of the wound were acid or not, or in what respect it differed from a wound that had not been infected with the Bacillus Acidi Lactici. The quantity of acid necessary to retard the growth of many acid-producing bacteria is about 0.75 per cent. A lesser quantity might retard the growth under favorable circumstances, as in a test-tube, but not on the cheek of a dog which is constantly being bathed with saliva from the parotid gland, diluting and washing the acid away. At any rate, we require to hear definitely from Dr. Logan as to whether the surface of the wounds was by proper tests found to be in an acid condition.

In test III similar wounds were dusted with oxychlorin. One would be led to suppose that the oxychlorin would act in a similar manner to any antiseptic and not differ very much in its action from pyrozone. I cannot say anything against the legitimacy of this experiment, but it does not demonstrate anything more than that antiseptics have a beneficial effect upon a wound, which has long since been well known. The only question of interest here is whether oxychlorin acts better than any of the ordinary antiseptics, such as iodoform, oil of cloves, boracic acid, etc.

In regard to the wounds that were infected with the Staphylococcus Pyogenes Aureus and then treated in a similar manner to the other wounds, my previous remarks apply well to them. I might, however, say that it is a fact well known to bacteriologists that in the presence of media containing glucose or lactose the Staphylococcus Pyogenes Aureus gives rise to the production of acids, more especially lactic acid, and it is also able to grow in a distinctly acid media itself. The point, however, which I wish to emphasize is that experiments made without control tests and in such a small number of cases carry with them very little weight. The mouth of a healthy dog contains few microorganisms compared with man, the saliva is alkaline, and wounds left alone heal very readily. In the mouths of old dogs with badly decayed teeth and pus pockets microorganisms are found in large numbers. As the condition of the mouths of the dogs experimented on was not stated, we presume they were healthy, also as the saliva was not

tested before treatment and during the presumed formation of the acid, it is impossible to approximate the quantity or state definitely if any at all was formed. The number of cases treated was too small to warrant anyone in drawing a definite conclusion, since it is impossible to make the conditions absolutely the same in all cases, as even two wounds in the same mouth treated in the same manner by no means necessarily heal in the same length of time.

HISTORY OF DENTISTRY.

By H. W. Bohn, D.D.S., Reading, Pa. President's Retiring Address. Read Before the Reading Dental Society, Jan. 4, 1900.

During the past two years no less than seventy-five papers have been written and published on this subject, either giving history, or urging the necessity for writing a concise American dental history, many urging that it be taught fully in the dental colleges. In response to this popular demand the National Dental Association has appointed a committee to gather data and write a detailed history, which will no doubt become a college text-book.

The first appearance of dentistry as a specialty of medicine was at a very remote period. Herodotus (500 B. C.) speaks of physicians giving special attention to the teeth. Gold filled teeth have been found in the skulls of Egyptian mummies. Hindoos and Egyptians are the first recorded to have inserted artificial teeth. The tenth of the celebrated Greek laws of the twelve tables relating to funeral ceremonies has this direction—"Let no gold be used, but if any one has had his teeth fastened with gold, let it be lawful to bury or burn that gold with the body." It is recorded that Erasistrasus (300 B. C.) deposited a leaden odontogogue which he called a tooth-drawer, to prove that only those teeth ought to be removed which were loose or relaxed, and for which a leaden instrument would suffice, showing that he possessed the present professional spirit of preserving teeth, and that certain phases of dentistry in some hands have not improved but suffered retrogression. Celsus, who lived about 100 B. C., was the first to recommend the use of a file in the mouth, saying that "the points of decayed teeth which hurt the tongue should be removed with an iron file."

On Feb. 8, 1579, Dr. Ambrose Paré wrote in reference to his work on Surgery: "I have so certainly touched the work whereat I aimed that antiquity may seem to have nothing wherein it may

excel us, besides the glory of invention: nor posterity anything left but a certain small hope to add some things." Under the subject of dentistry he gives the following expert advice: "Therefore for the better plucking out of a tooth, observing these things which I have mentioned, the patient shall be placed in a low seat, bending his head back between the tooth-drawer's legs. Then the tooth-drawer shall deeply scarify about the tooth, separating the gums therefrom with the instruments, and then if spoiled, as it were, of the walls of the gums, it grows loose, it must be thrust out by forcing it with a three-pointed levatorie; but if it stick fast and will not stir at all, then must the tooth be taken hold of with some of these toothed forceps, now one then another as greatness, figure and site shall seem to require. I would have a tooth-drawer expert and diligent in the use of such toothed mullets, for unless he know readily and cunningly how to use them, he can scarce so carry himself but he will force out three teeth at once, and oft-times leaving that untouched which caused the pain."

Coming down to the Eighteenth Century, we find that by the latter part anatomy and physiology of the teeth had become almost as accurately and completely demonstrated as it is at present.

Mineral teeth were first introduced in France about 1774. Prior to that date wood, or elephant and hippopotamus ivory was used.

The first regularly educated dentist in the United States came from England in October, 1776, having been instructed by Thomas Berdmore, dentist to King George III. His name was Mr. Woofendale. He practiced in New York and Philadelphia, and returned to England two years later, it being supposed that he did not receive sufficient encouragement in his profession. He made a full upper and lower set for Mr. Wm. Walton of New York, it being the first on record. The next dentist was Joseph Lemaire, who came with the French army in 1778 and who fought for our independence. He was the first person to teach dentistry in this country. It is said that "he was skillful in practical operations, especially in transplanting teeth."

Joseph Flagg was the first educated native dentist, having been instructed by Lemaire while the French and American armies were in winter quarters side by side near Providence, R. I., 1781-82. Immediately after the war he started as an itinerant dentist. The contents of a circular which he used to distribute in the different

towns that he visited, and which is supposed to have been printed about 1790, may be interesting: "Dr. Flagg transplants teeth, cures ulcers and eases them from pain without drawing, fastens those that are loose, mends teeth with gold to be as lasting and useful as sound teeth, and without pain in the operation, makes artificial teeth and secures them in a lasting and serviceable manner. Cuts the defects from teeth and restores them to whiteness and soundness without saws, files, acids and such abusives as have shamefully crept into the profession and which have destroyed the confidence of the public. Sell by wholesale and retail dentifrices, tinctures, chewsticks, masticks, teeth and gum brushes, suitable for every age, complaint and climate, with directions for their use." Being curious to know what the chewsticks and masticks were, we looked up the matter and found the former to be the branch of a creeping shrub of the buckthorn family, native to the West Indies, and the latter a small evergreen tree in the Mediterranean region. They were used as tooth-brushes.

At about the same time Mr. Greenwood, then a manufacturer of mathematical and nautical instruments, incidentally took up dentistry. He was the first dentist who opened into a diseased antrum making an opening through the socket of a molar, and effected a cure. Also the first to strike up a gold plate to serve as a base for a denture, which was done in 1799. He is best known as having been the dentist to our first president, George Washington.

I will now briefly give you the data of the inventions and improvements of the present century. The first porcelain teeth in this country were brought from France in 1817 by Dr. Planton, who also was the first to manufacture porcelain teeth in America. In 1844 Samuel S. White, who had served a seven-year apprenticeship with his uncle, S. S. Stockton (then the leading manufacturer of teeth), began in a small way to produce them in the garret of a dwelling at 17th and Race streets, Philadelphia.

Between 1815 and 1820 continuous gum first made its appearance in France, Dr. Chemant being the inventor. In 1854 Mahlon Loomis first introduced porcelain as a base for artificial dentures. Dr. Chapin A. Harris designed the air-chamber in 1835. In 1855 Charles Goodyear, Jr., obtained in England a patent for making a dental plate of hard rubber called vulcanite, which is the first record of vulcanite plate-work. The trouble and litigation follow-

ing its introduction are too voluminous to repeat here, and are no doubt well known. Plaster of paris was first used for the purpose of taking impressions of the mouth in 1844 or 1845, credit of its first use being divided among Drs. Westcott, Dwinelle and Dunning.

The use of gold as a filling material became common among dentists as early as 1800. In 1812 or '13 Marcus Bull began gold beating in Hartford, Conn., with Charles Abbey as apprentice. They subsequently moved to Philadelphia, where the first place was established for the manufacture of dental gold. In 1846 Dr. Jackson invented sponge gold, and had one of his own teeth filled with it.

As near as can be ascertained, amalgam was introduced into this country from France in 1833 by the Crawcours, who were then known as the two French empirics, after which followed what is known as the amalgam war, with which you no doubt are all acquainted. Suffice it to say that resolutions were passed in some of the leading dental societies as late as 1845, expelling any member who did not sign a certificate pledging himself not to use amalgam, and to prevent others so far as possible from using it.

Gutta-percha was first used as a temporary stopping in 1847. Pulp-capping was first practiced by D. C. Ambler in 1827. Destroying pulps by arsenic was first demonstrated by J. R. Spooner, of Montreal.

The exhilarant effect of nitrous oxid gas was first noticed by Humphrey Davy in 1800, but was not used for a general anesthetic until 1844, when the discovery was made by Horace Wells. The discovery of ether for the same purpose occurred a year later. Chloroform was discovered almost simultaneously by three parties in New York, France and Germany, in 1831 and 1832; its anesthetic effects in 1847 by J. Y. Simpson, from which time dates its use in dentistry. Local anesthesia was first brought to notice by Dr. Chase of Vermont in 1830. Its successes and failures in the interim (more of the latter than of the former) are well known.

The use of rubber-dam was introduced in 1864 by Dr. Barnum of New York. In 1858 appeared the instrument which rendered possible the modern dental engine, being the invention of Charles Merry of St. Louis—the Morrison being the first standard, which was introduced in 1870. The first reasonably complete set of extracting forceps recorded was the work of Dr. J. F. Flagg in 1828. The first dental chair was designed by M. W. Hanchett in 1848.

The foregoing is a brief review of the more important discoveries and inventions, saying nothing of the vast improvements in all since their advent. A few words now in reference to dental societies, colleges, laws and literature. In 1817 Dr. Hayden suggested the necessity for a dental society, but he was not successful until 1837, when the New York Society of Dental Surgeons was formed, which was of only temporary existence. The American Society of Dental Surgeons was the first permanent organization, being formed on August 18, 1840. The Pennsylvania Association of Dental Surgeons was the fourth, organized in Philadelphia Dec. 15, 1845.

The first dental college in the world was opened at Baltimore in 1839, and commenced its first session the following year. In 1841 were graduated two men, who were the first in the world to receive the degree of D.D.S. The last report of the Association of Dental Faculties shows about fifty colleges in active operation in this country.

Alabama was the first state to have a dental law, which was enacted December 31, 1841, followed by New York and others, with Pennsylvania sixth in 1876.

The first American standard work was that of R. Woofendale in 1783, entitled "Practical Observations of the Human Teeth," so that all the valuable and indispensable literature with which we are blessed to-day is practically the work of the 19th century.

About 1840 was published the first journal in the interests of dentistry, being entitled "A Treatise on Dental Medicine," etc., edited by Dr. Westcott. The *Dental Cosmos* was first published in 1847, being then known as the *Dental News Letter*, and continued until 1859, when it assumed its present name. The *Dental Digest* first appeared Jan. 1, 1895, has just completed its fifth year, and as an all-round dental journal stands second to none. Its free speech in daring to criticise existing abuses in the profession, and its being the organ of the Dental Protective Association, at once places it in high esteem among all progressive men.

What a splendid array of fine and beneficent work this brief review places before us. The names of inventors and discoverers just quoted will go down in history. They were men of broad and liberal spirit; not suffering themselves to feed on petty jealousies which make the life of any professional man ignoble, worthless and mean. A certain amount of self-conceit is necessary, but in the

uninstructed it often appears ridiculous. It is said that a physician once told a dentist that "he owed his life to that quality; for by keeping himself so stiffly upright he opened his chest and counteracted a consumptive tendency." Through the efforts of those liberal-minded men egotism has been largely banished from our profession. Nothing is stronger than they who are vehicles of the truth.

ESTHETIC DENTAL PROSTHESIS.

By C. F. Bunbury, D.D.S., Rochester, N. Y. Read Before the Rochester Dental Society, Oct. 16, 1901.

Let us first consider full dentures. From an esthetic standpoint there are three factors to contend with—the patient, the patient's friends, and ourselves. The patient we can generally convince, the friends seldom, and ourselves—well, we are arrayed against a multitude, but do the best we can.

So few of our patients, when they are forced to resort to false teeth, care to have the natural teeth duplicated, yet age, physical development and temperament should always be taken into consideration. If the patient is elderly the teeth should not be too light in color, nor too short and regular. A little irregularity is sometimes very artistic. The centrals may be dropped considerably lower than the laterals. One central may be slightly shorter than the other so as to give it a worn appearance, or the laterals may slightly overlap the centrals. The cuspids may be quite prominent and slightly darker than the rest of the teeth. The cusps on all artificial teeth are generally too sharp and well defined; and the cuspids especially may be ground almost flat, as the natural ones invariably become worn that way.

The arrangement of the teeth is not the only thing to be considered in an upper denture—the building out of the gum work is equally as important and needs a great deal of attention. A careful study of the features, an idea of how the patients looked when they were younger, the art of applying a little more wax here and perhaps a little less there, will often erase wrinkles and make the patient appear years younger.

With lower dentures the same care must be taken. They are generally not so conspicuous, but the same rule must be followed as to length, and if a worn appearance can be imparted the result will be indeed artistic.

The building out of the gum is frequently given but little thought, for how many people we see every day with the appearance of a mouth full of mush. Occlusion is of great importance, not only as a means of comfort to the patient, but as an aid to the esthetic, and here sometimes arises a great difficulty, it being almost impossible to have good occlusion and retain appearances. The most artistic work can be done with plain teeth, for they give us a chance to display skill and to more easily duplicate nature.

With partial dentures the work is not so difficult, for the patient having some teeth in the mouth, the operator is not called upon to use his imagination, but only his skill in duplicating from a fixed model.

I think the most natural appearing and artistic anterior crown is a Logan, with a band; and as for bicuspid crowns, those with a porcelain facing are infinitely less conspicuous and certainly more esthetic than the all-gold ones.

YOUNG MEN IN DENTISTRY.

By T. I. Way, D.D.S., Cincinnati. Read Before the Cincinnati Odontological Society, Nov. 30, 1900.

That the young man has been and is an important factor in the advancement of dental science and art cannot be denied, and the real students of mature years are those who began early to investigate along certain lines. In reviewing the careers of those who have given inestimable service to dentistry I am pleased to note that the young man has contributed a liberal share. At the start of a career the ambition is to excel, but to do this requires something more than enthusiasm, this being a quality with which young men are rather overendowed. However, when it is tempered with thoughtful observation and diligent application success is bound to result. In all walks of life it is the constant student who reaps the reward.

It seems fitting to mention first one well known to those present —Dr. James Taylor. At the age of thirty-six through his efforts the first institution of dental education in the west was established. As a young man he was in advance of his time and contributed to the upbuilding of the profession in many ways.

In the late '70s we find prominent among the leaders of that time the name of Marshall H. Webb, whose ability as an operator was

phenomenal, and whose efforts, although a young man, resulted in an advancement which has lasted until now.

Not alone by his recent death, but by attainments are we attracted to the life of Henry H. Burchard, than whom there is none that has accomplished more for his fellow educators in the profession. To quote from a recent sketch: "If we measure the life by its fruits rather than by its tale of years, then Burchard has exceeded the vast majority of those who survive him. Although a young man, his value to the profession will be far reaching and of lasting benefit."

If we enter the educational field we find the young man much in evidence, also in journalism, in the councils of dental societies, and as an exponent of rational methods in our calling.

In the rapid advance of dentistry electricity has largely entered, and foremost in this work we find Dr. L. E. Custer, whose investigations have been fruitful of much good to the profession.

To come closer to our own society, Dr. J. R. Callahan was still a young man when he gave to the profession his method of employing sulphuric acid in pulp treatment, which in many cases has been invaluable.

Finally, let me present the name of one whom we all delight to honor, and whose attainments have been reached by the vigorous prosecution of scientific problems—Dr. G. V. Black. He began early as a student, and no subject was too difficult for him to grapple with. He to-day stands as one worthy of emulation by every young man in our profession.

We are accused of not being students, and while this may apply to a certain proportion of practitioners who are content to remain on the lower rounds of the ladder, the fact remains that there are more thinking, observing men and that more interest is manifested in the dental doings to-day than at any other time in our history. The young men must be thoroughly alive to the situation and be prepared to take up their share of the burden. There is no doubt that they are equal to the task. While few may rise to eminence and stand conspicuous, that the ideas, ambitions and attainments of young men as a whole are steadily advancing is a happy thing to contemplate.

Discussion. *Dr. H. A. Smith:* It occurs to me that as dentists advance in years, and see the progress made by the profession, they

should record their observations. Such records would be not only valuable as history, but also would benefit the rising generation.

Dr. C. M. Wright: The only trouble with young men is that they get over being young, and often when a certain age is reached they feel that the enthusiasm of youth is not necessary, and thus get lazy and drop out. I should like to hear some one take up the subject of the enthusiastic old man in dentistry.

Dr. A. G. Rose: Somehow it does not seem to me that those entering the profession to-day are filling the bill as did the men of thirty and forty years ago, for even with crude instruments and laboring under great difficulties they made dentistry what it is.

Dr. F. A. Hunter: As a young man I should like to speak. It is the young men who have made the history of the world and of dentistry, but nowadays they do not "speak out in meeting," but seem rather retiring.

Dr. O. N. Heise: I fully realize that young men have in the past accomplished a great deal, but the young men of to-day have no ideals and simply strive after the almighty dollar. They do not seem willing or able to take up a subject and do work with it which will entitle them to be called original investigators. If they read a paper before a society there is nothing new in it. The young men must work as Webb, Black, Johnson and others have done, if they are to surpass or equal the standard already set.

Dr. H. A. Smith: Campaign politicians frequently say that the hope of the country lies in the young men, but this is hardly true, as we all have to do our share in supporting the government. In the same way I do not believe that the success of dentistry depends wholly upon the young men. The sixtieth birthday of Prof. Fenger was recently celebrated in Chicago, and representative physicians and surgeons from all over the country gathered there to do him honor. He began his life-work as a young man, but he is still very active and busy. In looking over any profession, the illustrious men were industrious when young. The fault with the young men to-day is that they are not students and seem to think only of building up a practice. Even looking at the matter from a commercial standpoint it pays to be a student. The leaders and workers of the profession to-day are not young men, and the latter must form habits of investigation and study before they can take the places of their elders.

Dr. S. J. Rauh: The medical student attends college three or four years, then tries for and perhaps succeeds in securing a hospital position, and after that goes to Europe for a year or two. By the time he returns he knows how to study. The dental student, however, attends college three years and then looks for practice—in fact, he starts to practice after the first year of school life, all of which does not tend to make him a student.

Dr. C. M. Wright: I believe young men in dentistry have done as well as those in any profession. It would be impossible for every one to take up original investigations, and the mechanical inventors are entitled to just as much credit as the scientists.

Dr. Smith: As a profession we hold just as high a position as the men of medicine, and I think Dr. Rauh is unjust, as the educational standard of our students is higher than that of the average medical students. The manual labor connected with dentistry is exhausting, but a man's being busy is no reason why he cannot study. As a rule the busy practitioner is the one who does the most literary work.

Dr. Heise: Had Dr. Black and others like him done the same work for the medical profession that they have for dentistry, their names would to-day be known throughout the world. Furthermore, they do not receive the same compensation that the medical men of equal genius do. Dentistry does not occupy the same position as medicine, and it must have a broader foundation. Dentists should have a thorough knowledge of the accessory sinuses of the nose, etc. Young men cannot all be original investigators, but they should broaden out and show some interest in such things.

COMPARATIVE TEST OF AMALGAMS IN ACTUAL PRACTICE.

By J. W. Cowan, D.D.S., Geneseo, N. Y. Read Before the Rochester Dental Society, Feb. 12, 1901.

The criticism of Doctor Black's experiments has been, that they do not represent the action of amalgam when subjected to the conditions that exist in the human mouth, and to satisfy myself on this point I commenced a small series of experiments last summer and will give you the results of my observations. The alloys tested were Alba, Welch's Gold and Platinum, True Dentalloy and Fellowship. It must be remembered it was not possible to use the

scientifically constructed appliances Doctor Black employs; so the results could be measured only by the eye and the trained sense of touch.

So far as possible I endeavored to eliminate from the tests the differences in physical condition of the operator which might redound to the credit or otherwise of any of the alloys tested, and so far as possible I endeavored to make the conditions in the mouth equal. For instance, in the first test I prepared compound approximal cavities in the four upper bicuspids in so nearly a correct manner as possible; they were, so far as could be judged by the eye, of the same size; they all had the same amount of anchorage and the strain of mastication seemed to be equally distributed. All four fillings were introduced on June 9, 1900. The filling in the left second bicuspid was made of Alba Alloy, that in the first, same side, was made of Fellowship Alloy; the first right bicuspid was filled with True Dentalloy, and the second right was filled with Welch's Gold and Platinum Alloy. The alloys were mixed strictly in accordance with the directions which accompanied each package, introduced and thoroughly condensed under pellets of bibulous paper, matrices being used to facilitate the packing, and two days later all the fillings were finished and polished with great care. When the fillings were completed there seemed to be no perceptible difference in color, excepting that made of Fellowship, which seemed to have a slightly more bluish tint than the others. Careful records were made at the time, and the patient was asked to report for examination in six months.

On Dec. 27 I again examined these four fillings, finding them all in place and good for many years of service. The margins of the filling made of Alba Alloy were not perfect, an ordinary magnifying glass showing a distinct seam, and the point of an exploring instrument would follow the margin. Wherever it could reach the margin the color of filling was good. The filling made of Welch's Alloy was distinctly better so far as the margins were concerned, but the color was not quite so good. The Fellowship filling was very good indeed, it being just possible to find the margins with a sharp-pointed explorer and the glass showed very little apparent shrinkage, but the color was not good at all. The True Dentalloy filling was to all appearances perfect, there being no perceptible change in the margins, the explorer point slipping over them just

as it would over the margin of a good gold filling; the color also was better than any of the others. I determined the amount of discoloration which had occurred by running the edge of a cuttle-fish disk over a part of the fillings, thus showing exactly the change that had occurred since they were polished last summer.

I have a number of other similar amalgam tests under observation, but at this time will mention only one other case, where I filled the lower first molars after the pulps had been devitalized, roots treated and filled. Both cavities were large and necessitated contour fillings, and in this case as in the above I endeavored to shape the cavities exactly alike, giving the fillings the same anchorage and subjecting them to the same strain. The left molar I filled with True Dentalloy and the right with Fellowship. I used a matrix in making both fillings, condensing the amalgam just as solidly and carefully as possible. The finishing and polishing of the fillings was attended to the following week, the same amount of care being exercised as in finishing a gold filling. These two fillings were made on July 2, 1900, and were examined January 25, 1901, with the following results: The Fellowship fillings showed very slightly imperfect margins and some discoloration; the True Dentalloy filling showed perfect margins and considerable discoloration except on the grinding surface, which seemed to be about as well polished as when originally finished. To sum up, True Dentalloy seems to have points of superiority over the other three tested, with Fellowship a very close second, Welch's distinctly inferior to the two above, and Alba making the poorest showing.

Discussion. *Dr. C. H. Nicholson:* Many operators claim they can make an alloy as good as any on the market, but I doubt it, for no practicing dentist has the time, facilities, or even the knowledge necessary to make quantitative and qualitative analyses essential to the manufacture of a reliable alloy. The physical tests of amalgam are invaluable, because the conditions under which they are made are uniform and allow free access for manipulation and examination, which cannot be afforded in actual practice. After all, however, the supreme test of an alloy is in the mouth, and under some such conditions as outlined by the essayist, but a longer time should be given before judgment is rendered.

Dr. F. M. Rood: It was a long time before I found anything equal to Sterling, but now nothing fills the bill like Fellowship.

Dr. F. French: I have found that alloys do not work the same at all times when used from a receptacle more or less open to air.

Dr. B. S. Hert: I have used both Alba and Fellowship, but have found the former very unsatisfactory. With Fellowship I have certainly had most excellent results, and except in rare cases use it exclusively. Its color never turns dark, and thus far I have never noticed any change. Dr. French's point is well taken, but most alloys expand a little at first and after exposure to the air remain unchanged. Amalgam would be more used if we could obtain fair compensation for the work, and if this were true the fillings would be put in with more care.

Dr. W. W. Smith: I would ask Dr. Cowan if the occlusion was the same? Whether he weighed his alloy? What alloy he generally uses? and how he mixes Fellowship?

Dr. Cowan: The mouth in question had all the teeth but one third molar, and they were in rather good shape, so I believe the occlusion was the same on all fillings. True Dentalloy is the only one which I weighed, as it is the only alloy where the manufacturers insist on measuring in order to have perfect fillings. I have depended upon Welch's Gold and Platinum Alloy for the last six or seven years; formerly used considerable Alba, but it has deteriorated. I mix Fellowship in the palm and then grind it in a mortar.

Dr. F. W. Proseus: Dr. Cowan's remarks are practical, but six fillings are not enough to establish facts. I believe all the old alloys should be discarded and only the new ones used. Recently I asked Dr. Black why True Dentalloy set slower than Fellowship, and he replied that it was manufactured with this property principally to please the dentists of Philadelphia who were used to very slow-setting alloys. He further stated that if any dentists nowadays were getting a poor alloy it was because they were buying of a careless or incompetent manufacturer. I have used Fellowship, True Dentalloy and Garhart's, and the last has the smoothest working qualities of any. All we need to do is to find the most reliable manufacturer and buy from him exclusively. I have found that Fellowship gives results which no other alloy does, and in some mouths it holds its color perfectly, best when polished. If people will not pay for gold filling in children's teeth, why not put amalgam where it is not apt to discolor the enamel and dentin, and I believe the new alloys will not do so.

Dr. F. L. Sibley: I have used various alloys, but have had the best results with Fellowship. I have never followed directions in mixing any alloys, and probably as a result a great many fillings stay in and some come out.

Dr. F. J. Tarrant: I have used considerable Fellowship alloy and have found it very satisfactory.

MOVEMENTS OF THE MOUTH AND PHARYNX IN INSUFFICIENCY OF THE AORTIC VALVES.—Hermann Schlesinger in the *Weiner Klin. Woch.* had his attention called to this symptom in which there were pulsations in the mucous membrane of the mouth and nasopharynx synchronous with the action of the heart. This symptom has been studied by others; Muller, in 1899, noted pulsation in the mouth and pharynx in a case of aortic insufficiency. The marked case which he saw led to his study of the same condition in some forty cases of aortic insufficiency. Pulsation was noted only in a few of the cases. To obtain the symptom, the patient must breathe quietly through the mouth; the posterior wall of the pharynx must be in full view, and this must be accomplished without mechanical depression of the tongue, as this interferes with these peculiar appearances. Very marked pulsation in these parts is noted only in cases in which it is also apparent in other parts of the body, and often the tonsils and base of the tongue take part in the same movement. In ten of the cases the base of the tongue was noted to distinctly rise and fall with each pulsation of the heart. An infrequent symptom is a coincident narrowing of the pharynx and oral cavities. The latter is brought about by the swelling of the tongue. Such a marked appearance was noted in only four of the cases.

FATALITIES OF SPINAL COCAINIZATION.—P. Reclus states that spinal cocainization now has a record of six deaths in Europe. Goilav and Jonnesco, of Bucharest, have each reported a fatality. In the former's case 1.5 cg. of cocain was injected and a leg amputated. Two hours later and the temperature rose to 38 and 40 C., pulse 125 and death in twenty hours. Juilliard has also reported a death the second day after an operation for hydrocele and inguinal hernia. The autopsy showed a ruptured aneurism of the Sylvian artery The vasoconstriction induced by the cocain may have been a factor in the premature rupture of the aneurism. Even in Tuffier's case, in which a mitral lesion and acute edema of the lung have been assigned as the cause of death, Reclus queries whether the action of the cocain may not have been a factor in the evolution of the edema. Heumberg has also reported the death of a man of 30 in coma fifteen days after an operation under spinal cocainization. The autopsy disclosed hemorrhage in the cauda equina. In Dumont's case a febrile, tuberculous lad in bad general condition died two days after spinal cocainization, and no direct cause for the death could be discovered at the autopsy unless it were the cocain. The total of six deaths to less than 2,000 applications of spinal cocainization is not an encouraging record, he remarked, in the conclusion of his address to the Paris Academie de Medicine, March 19.—*Jour. A. M. A.*

Digests.

SYPHILITIC DISEASES OF THE TONGUE. Heath calls attention to the fact that induration of the sore in this location may not be present to the degree that it is on the genital organs. Sores upon the lips and tongue that are accompanied in the young by rapid lymphatic enlargement under the jaw are strongly suggestive of chancre. The communicability of syphilis by mucous membranes is not questioned to-day, therefore a specific infection of the tongue or of the lip may innocently be produced, although it is possible that abominable practices are often responsible for direct inoculation into the tongue. Drinking utensils and pipes may also convey the virus. He presented a patient with a secondary eruption of syphilis and of mucous tubercles similar to the mucous plaques seen about the female genitals. As in the female genitals, the author considers that various mucous surfaces in the mouth which frequently are brought into apposition may mutually infect each other. Several illustrations were presented showing syphilitic ulcerations of the tongue. Thickening of the tongue is a frequent associated factor and may cause the patient considerable alarm, and for treatment of this condition he pushes mercury in the form of a mercurial mouth-wash of perchlorid of mercury, from 1:2000 upward, to be held in the mouth for five minutes by the watch. Mercury at the same time is also given internally, and most satisfactorily by inunction. The sulphur baths at Aix-la-Chapelle are not responsible for a cure, although very pleasant, but it is the daily inunction of mercury by the attendants which is fruitful of the beneficial results that have been so frequently obtained. Syphilitic affections of the tongue may occur, which appear to border between secondary and tertiary stages; these are in the nature of lacerations that are not actually gummatous in character. In discussing tertiary syphilis of the tongue, he mentions a case where throughout the substance of the tongue there were disseminated little nodules consisting of syphilitic deposit which did not yield to antisyphilitic treatment, malignancy being suspected. The whole tongue was excised, and upon microscopic examination a distinct epitheliomatous condition was found in addition to the gummata. The author believes that any continued irritation, such as a pipe, may give rise

to epithelioma. Leukoplakia may occur entirely distinct from syphilis, tobacco being usually the cause. He believes that the addition of tobacco will greatly aggravate a subject already affected by syphilis. Hypertrophy of the papillae of the tongue should not be confounded with syphilitic warts that are frequently seen at the back of the organ.—*Brit. Med. Jour.*

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NASAL OBSTRUCTION. In a series of experiments in the physiological laboratory of the Medical College of Indiana, Morrison arranged some special apparatus for investigating this subject, and in substance gives the following summary of his results: With the mouth slightly closed each ventricular systole causes a distinct but slight change of pressure in the buccal cavity. Quiet respiration through the nose has but little effect. In wide-open mouth breathing not exceeding eighteen to twenty efforts per minute no change in pressure occurs. As the orifice of the mouth is slowly contracted, negative pressure is gradually developed in inspiration and increases with the diminution and size of the orifice until it is closed, when it abruptly falls to the normal. If the mouth be opened widely and respiration is increased to thirty-six per minute, marked negative pressure persists in inspiration. In the nose without obstruction and with the mouth closed a very slight negative pressure is developed in inspiration, and a still slighter positive pressure in expiration. In the ear no appreciable change of pressure was noticed. Slow occlusion of one nostril with closed mouth causes rapid increase of the negative mouth pressure, which becomes very marked when a sense of dyspnea leads to respiratory effort. If one resists the feeling of dyspnea and breaths slowly, such increase does not occur. If the mouth be slightly opened negative pressure still persists, but slightly diminished. Repeating aloud some words very rapidly until out of breath, then taking a sudden deep inspiration with one nostril closed develops greatly exaggerated negative mouth pressure. In the nose, occlusion of one nostril causes high negative pressure during inspiration, which is increased if the other nostril is partly occluded. If both nostrils are completely closed no such fluctuation in pressure takes place. This high negative pressure from occlusion of the nostrils is only very slightly relieved by opening the mouth. When sufficient obstruction is produced to lead to mouth-breathing or labored attempts at

nose-breathing fluctuations of pressure take place in the middle ear. In a state of health very little negative pressure or "suction force" is developed in either mouth or nose. No changes occur in the ears. With rapid breathing negative pressure slightly increases in both nose and mouth, but not to an injurious degree. With marked nasal obstruction the negative pressure is found in both nose and mouth, and slightly in the ear, and is increased by any effort leading to exaggerated respiration, such as speaking, singing, muscle exertion, etc. This condition is not relieved entirely by mouth breathing. Early relief from nasal obstruction is demanded. Before the patient becomes a "mouth-breather" every inspiration has been acting as a cupping glass upon the nasal and nasopharyngeal membrane and the cupping action is not relieved when the lips are parted in ordinary mouth-breathing.—*Jour. A. M. A.*

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SIMPLE PEDUNCULATED FIBROUS EPULIS AND SUPERNUMERARY TEETH. By Mr. J. J. Turner. Mr. Turner had records of eight cases of simple pedunculated epulis, six in the upper and two in the lower jaw. The six upper all occurred in the region bounded on either side by the first bicuspids, and the two lower in the median line. The tumor might occur from the outer alveolar plate above the level of the necks of the teeth, and when once cut away showed no tendency to recur. The position in the eight cases, the age, and the absence of any source of irritation, suggested that they were of developmental origin. He considered extra teeth were commonest in front of the mouth, in the region of the internasal fissure, and of the oral ends of the orbito-nasal fissures. In some cases of cleft palate and hair-lip extra teeth were found, and he passed round a chart of a double cleft palate and hair-lip in a boy of fourteen, where there were two extra teeth behind the alveolar, one on either side of the oral part of the orbito-nasal fissure. There was no history of laterals, but the upper central was so stunted that it was extracted. Mr. Turner concluded that extra teeth might be expected in the face and neck in the region of the developmental fissures though he was not prepared to state their full meaning. It had been asserted that extra teeth were found in cleft palate cases on account of stimulation by extra blood supply. As against that he had a temporary tooth from a child suffering from double hair-lip and cleft palate, in whom both lateral

pieces sloughed away, obviously from malnutrition, and the piece he obtained contained the temporary central incisor. His desire was simply to get the question made the subject of collective investigation. Careful note should be made that the epulis was a true pedunculated tumor dependent on no irritation. In the investigation of supernumerary teeth models should be taken of all cases of cleft palate, whether extra teeth were present or not, and the positions of hair-lip or cleft dotted on the model.—*Dental Record.*

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CHRONIC ABSCESS TREATED BY AMPUTATION OF ROOT. By Edmund Buckeridge. This case presented itself in the clinic last spring. The patient had had abscess after abscess upon the left upper central incisor for a period extending over more than three years. The tooth had been devitalized and a gold shell crown placed upon it, and the canal filled with cement, a portion of which protruding through the apical foramen had been the cause of abscess. In order to treat the abscess the crown had been removed, and when I first saw the patient a cement crown was taking its place.

The patient wished a Richmond crown in place of this unsightly mass of cement, and in view of inserting one a practitioner had been trying to cure the abscess by customary methods, but was unable to effect a permanent cure owing to the presence of the original cause and the fact that a large portion of the root had become denuded of pericementum, and was therefore nothing but a foreign body in the alveolus and a constant source of irritation. It thus became necessary to remove this body before there could be any lasting success. Two courses now presented themselves—extraction of the tooth or amputation of the denuded portion of root. The latter was decided upon, as the patient was unwilling to lose so prominent a tooth.

The canal was filled with Fellowship amalgam, and an injection of a two per cent solution of cocain made in the region immediately surrounding the root. Then, with a bayonet-shaped drill, I cut straight through until I could feel by the diminished resistance that the instrument had pierced the root. By lateral pressure I completely severed the apical portion, which was then extracted with some difficulty with a pair of foil carriers. The operation was accompanied by a fair amount of bleeding and there was considerable pain. The wound was thoroughly rinsed out with phenol

sodique and packed with iodoform gauze. The greatest care was taken to avoid infection by unclean instruments.

For a week the patient came in every day to have the wound washed and repacked with gauze. At the end of that time all signs of suppuration had ceased, though there was a feeling of tightness or fullness in the tissue directly above and some soreness in the wound itself. The packing was then discontinued, the wound left patulous, and the patient instructed to syringe it daily with a one-half per cent solution of formalin. The tooth was very loose in its socket for nearly three weeks, after which it slowly tightened as new tissue filled up the wound. Patient having to leave town a month after operation, although tooth was still loose, a Richmond crown was placed upon it. There was then a slight depression in the gum marking point of excavation, but all unpleasant feelings had passed off. No further indication of renewal of an abscessed condition has appeared up to the present, while the tooth is now firmly fixed in its socket.—*Penn. Dental Journal.*

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ANCHYLOSIS OF HUMAN TEETH TO THE JAW. By G. W. Watson, L.D.S., Scotland. He said there are four different methods of fixation of teeth. 1. *Fibrous.* In this method of attachment the teeth are fixed in a tough fibrous membrane lining the interior of maxilla and mandible. The membrane gradually slides from below upwards carrying the teeth, so that as the marginal ones drop off from wear, the next row takes their place. Good examples of this class are found in rays and sharks. 2. *Hinge.* In the Angler the largest outer row of teeth are capable of movement inwards, but not outwards; they are kept in place by strong fibrous ligaments attached to their inner base; the other teeth are anchylosed to the jaw. When the Angler captures a fish the marginal teeth forwards allow it to pass easily onwards; once it is in, the teeth spring up whenever the pressure is removed, and thus prevent its escape. 3. *Anchylosis.* Attachment by anchylosis is found commonly in fishes and reptiles. This method of fixation takes place through the medium of a large or small portion of bone, bone of attachment, at the base of the tooth, as in Ophidian Reptiles, or the tooth surmounts a hollow cylinder of bone, as in the eel or haddock. 4. *Socket-Gomphosis.* As in anchylosis there is here a special development of bone which is moulded to the contour of the root or roots

of tooth, but intervening between the root and osseous tissue there are two vascular membranes, peridental and periosteal, which generally though not always prevent bone from depositing directly on the fang.

Anchylosis of teeth to the jaws is natural in several classes of animals, notably fishes and reptiles. In the Australian shark the terminal end of the tooth is composed of osteo-dentin resembling bone so closely as to make it extremely difficult to say where the bone commences and the tooth ends. The bone of attachment in teeth anchylosed to the jaw is of a loose texture, full of irregular spaces, and differs in many respects from normal bone.

Anchylosis of teeth to the jaws, while common among the lower animals, is somewhat rare in the human subject. Pathologists have until recently doubted the possibility of anchylosis in the teeth of man; the two membranes, peridental and periosteal, intervening between the socket and the root, were supposed to preclude this. But judging from analogy it need not be so, as we see similar conditions produced by disease in the mandibular or other articulations, the destruction of the membranes and cartilages of the joint and its fixation by osseous deposit. The specimen which I exhibit is that of an inferior lower molar which on removal brought away with it a mass of bone attached to both roots; the pulp was dead and the tooth had been the cause of a good deal of irritation and suppurative inflammation. The tooth and bone were sectioned longitudinally through both roots and the section exhibits them surrounded by bone. It will be observed there exists no line of demarcation between the roots and the surrounding osseous tissue; there is a considerable thickness of cementum on both roots, the lacunæ and canaliculi blend into and intercommunicate with those of the osseous tissue of the jaw. The anterior surface of the right fang has a very thick layer of laminated, somewhat structureless cementum, with few lacunæ present and those chiefly in the center of the tissue, but it is traversed by numerous minute canaliculi; the posterior side of the same root has a thick layer of normal cementum covering it. This condition of anchylosis has an important bearing in respect to the extraction of teeth, making this operation much more difficult of accomplishment, and no doubt accounts for those cases we sometimes come across where the tooth breaks away bit by bit without our being able to get any consider-

able portion away at a time. It likewise has a bearing on the operation of replantation and transplantation of teeth. In replantation if the tooth has been replaced as speedily as possible, under antiseptic precautions, we may expect in favorable cases a reestablishment of the circulation between the peridental membrane, pulp and osseous tissue. But in implantation where the tooth may have been dead for years, to expect a restoration of the circulation in the peridental membrane as some aver, is absurd. But we can quite understand that fixation of such teeth is more likely to take place from a redeposition of bone on the root or roots, absorption cavities, lacunæ of Howship, being filled up by bone and thus fixing it more securely. The pathology of the process as regards human teeth is probably this: The peridental membrane under repeated attacks of inflammation is eventually destroyed, and in the process the osteoblast cells are irritated into renewed activity and productivity, osseous tissue is laid down close to the cementum, leaving no line of demarcation between the two tissues, the tooth and jaw becoming one solid mass.—*Dental Record, April, 1901.*

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ARTISTIC DENTURES. By E. A. Royce, D.D.S., Chicago. Read before the Chicago Odontological Society. Selecting the proper shades of porcelain teeth is one of the most important features of prosthodontia, and one in which our most skillful dentists signally fail. The efforts to imitate in our dentures the harmony of shading found in the natural teeth have been so inadequate as to be of very little practical value, in fact most of the dentures are made up without the least regard for the artistic work done by nature in inserting teeth of so many varying shades in every mouth. I have watched with much interest and gratification the improvement in the prosthetic department of dentistry, and it has been with especial interest that the growth and perfection of the use of porcelain has been witnessed. From time to time the attention of the profession has been called to the very inartistic effects produced by the crowns, bridges and dentures of to-day, and I had hoped that some one would point out a way to remedy this very grave defect in what should be the most artistic of all productions.

If we wish to select the bits of porcelain that are to represent the lost dental organs in full upper and lower dentures, we find certain rules given in all standard works, which if followed will indi-

cate to us the style of tooth required for the case in hand. These directions are the result of careful study and much thought by some of the best men that ever worked in prosthodontia, and are good so far as they go, but how many here present, after they have studied carefully the temperament of the patient and decided, probably correctly, as to the size, color and shape of the tooth indicated, are fully satisfied with the appearance of the dentures after they are placed in the mouth? The features may have been restored in the best possible manner, the teeth may have been selected correctly, according to the temperament, and they may have been properly articulated and occluded, but after all this they look like store teeth, say what you may. And even if, as advised by some, you have substituted darker cuspids than those in the set, you have relieved the very artificial appearance but little. This annoyed me for years, and I finally concluded that the fault was largely due to the sets of teeth as made up for us by the manufacturers, and all the changes that we make, like putting in fillings, or placing a dark tooth to represent a pulpless one, or any other art we might use to imitate the ravages of wear or disease, could not give the natural appearance to our artificial work so much desired, but that some radical change was needed in the teeth as a whole. In our dental literature we find records of casts and measurements that have been taken to the end that our teeth might be of the proper size and shape, but the varying shades of the natural teeth are nowhere spoken of, and becoming convinced of the importance of this feature I began the examination of mouths with the natural teeth in place to ascertain wherein the shading of the artificial teeth differed from the natural.

In our study of this subject we must have some standard by which to measure the shade of each tooth, and for this standard the upper central incisors of the denture under consideration were always selected. Some means being necessary to convey to you the different shades of the teeth in the mouth, I selected o or zero to represent the shade of the central incisors, using numerals to express the other shades—the higher the numeral the darker being the shade. Of course it is readily seen that a shade as a measure may vary according to the eye of the observer, but study and observation will educate the eye so that the proper shades can be easily selected. I did not fully appreciate the influence the second

bicuspids and molars had on the appearance of the denture as a whole, so at first I did not include them in my records, but in a few of the later records I have given their shades, so you can see about how they compare with the other teeth. I excluded all mouths in which large fillings, dead pulps or other causes affected the shade of the teeth, and out of a very large number of mouths examined I present to you records of only about fifty; these were of all temperaments and all ages, from eight to seventy-two.

The youthful denture is always described as one of beautiful uniformity of color—a most misleading statement which I will prove by the first case recorded, a child eight years of age. The only anterior teeth that had erupted were the central incisors. The superior incisor was taken as standard or o, and upon comparison the lower central was found to be three shades darker than its antagonist. This shows at once that the variety of shades in the denture does not come from age, but is there from the time of eruption. The second case was a child nine years old. The incisors were all in place, and in this mouth the upper lateral incisor was two shades darker than the central, which we take as standard, the lower central one and the lateral two shades darker. The age of the next was eleven, and the dentition had proceeded one step farther, as the cuspids were in place, and the record reads upper laterals two and cuspids three shades dark, lower centrals one, laterals two, and cuspids three shades dark. The fourth case was fourteen years of age and the bicuspids were erupted. In this case the upper laterals were three, cuspids eight and first bicuspids eight shades dark; the lower centrals one, laterals three, cuspids seven and bicuspids eight shades dark. Case five was sixteen years old and the laterals were three, cuspids five, first bicuspids six, and the lower centrals two, laterals four, cuspids six and first bicuspids six shades dark. These five cases are youthful dentures, in which the ravages of disease were not seen, and in which is produced in the greatest perfection the beautiful forms and coloring, than which nothing can be more artistic. Even in these perfect young mouths this great variety of shades is found.

Let us next look at case eighteen, twenty-two years of age. The record is lateral one, cuspid six and first bicuspid five; lower central two, lateral two, cuspid five and first bicuspid five shades dark. Again, case twenty-two has lateral four, cuspid eight and first bicus-

pid five; lower central three, lateral four, cuspid seven and first bicuspid five. A similar variation in shades of the standard color will be found in every case; even case forty-five, which shows a most remarkable preservation of the color and form of the teeth at seventy-two years of age. In this case the laterals were two, cuspids seven, first bicuspids eight, lower centrals one, laterals three, cuspids seven, and first bicuspids eight. The molars were included in the last three cases recorded, and they show positively that the molars, like all the other teeth, vary in shade from the upper incisors. This variation of shade is not in a dozen cases only, but I found only two cases in which there were other teeth in the mouth of the same shade as the upper central incisors.

Let us compare a set of teeth as furnished us by the manufacturers with one furnished by nature and see how they agree. In the former set the shading would be represented by o, and would read central o, lateral o, cuspid o, first bicuspid o, second bicuspid o and molars o—o lower centrals, laterals, cuspids, bicuspids and molars would all be represented by o. Compare this with case forty-nine of the record, central o, lateral two, cuspid seven, first bicuspid five, second bicuspid four, molars four; lower central two, lateral four, cuspid seven, first bicuspid six, second bicuspid five, and molars four. When you note the difference in the shading of the two cases do you wonder our artificial teeth look so unnatural?

The observations recorded in the table which I present to you prove that it requires teeth of five or six different shades to make up a natural denture, either upper or lower. The upper centrals are the lightest, the upper laterals are one to three shades darker, the cuspids three to nine shades darker, and are usually the darkest teeth in the mouth; back of them the teeth gradually grow lighter, but are never so light as the centrals. The same general order of shading holds good for the lower teeth; the centrals are the lightest, but are from one to three shades darker than the upper centrals, the laterals are darker that the lower centrals and the cuspids are again usually the darkest, the shades growing lighter as we proceed back from the cuspid. The ghastly appearance of the ordinary denture is due to the monotonous shading of the teeth used, and in no possible manner can we obtain a natural lifelike appearance except to produce in our dentures the same variety of shades that we find in the natural teeth. The foundation of the artistic denture should be

Number	Age	Upper Central Incisor	Lateral	Cuspid	First Bicuspid	Second Bicuspid	Molars	Lower Central Incisor	Lateral	Cuspids	First Bicuspid	Second Bicuspid	Molars
1	8	0	.....	.....	.....	.....	.....	3	.....	.....	...	....	....
2	9	0	2	.....	.....	.....	.....	1	2	.....	....	....	....
3	11	0	2	3	.....	.....	.....	1	2	3	...	....	....
4	14	0	3	8	8	.....	.....	1	3	7	8	....	....
5	16	0	3	5	6	.....	.....	2	4	6	6	....	....
6	16	0	2	6	5	.....	.....	2	3	5	4	....	....
7	18	0	1	4	5	.....	.....	2	3	4	4	....	....
8	18	0	2	5	5	.....	.....	2	3	6	5	....	..
9	18	0	1	3	3	.....	.....	1	2	3	2	....	....
10	20	0	1	4	3	.....	.....	0	1	3	3	....	....
11	20	0	1	4	3	.....	.....	2	2	4	3	....	....
12	20	0	2	7	5	.....	.....	2	4	8	6	....	....
13	21	0	2	6	3	.....	.. ..	2	2	4	3	....	....
14	21	0	1	4	3	.....	.....	1	1	3	2	....	....
15	23	0	3	6	4	.....	.....	2	3	6	4	....	....
16	22	0	1	6	5	.....	.....	2	2	6	6	....	....
17	22	0	2	6	5	.....	.....	1	3	5	4	....	....
18	22	0	1	6	5	.....	.....	2	2	5	5	....	....
19	22	0	2	6	5	.....	.....	3	4	7	5	....	....
20	22	0	2	5	5	.....	.....	1	1	3	3	....	....
21	23	0	1	6	3	.....	.....	1	2	4	3	....	....
22	24	0	4	8	5	.....	.....	3	4	7	5	....	....
23	24	0	1	5	3	.....	.....	1	2	4	3	....	....
24	24	0	2	7	6	.....	.....	2	3	6	5	....	....
25	25	0	2	5	4	.....	.....	3	3	5	5	....	....
26	26	0	1	6	4	.....	.....	2	2	5	4	....	....
27	26	0	1	6	6	.....	.....	2	3	6	6	....	....
28	28	0	2	7	6	.....	.....	3	4	6	5	...	....
29	28	0	2	4	5	.....	.....	2	2	4	5	....	....
30	28	0	1	4	6	.....	.....	1	2	6	6	....	....
31	28	0	1	5	4	.....	.....	1	2	3	4	....	....
32	29	0	1	3	2	.....	.....	0	0	3	3	....	....
33	30	0	3	6	5	.....	.....	2	3	6	4	....	....
34	30	0	1	7	5	.....	.....	2	3	5	5	....	....
35	33	0	3	6	4	.....	.....	1	1	5	4	....	....
36	35	0	2	8	6	.....	.....	2	2	7	6	....	....
37	35	0	2	6	7	.....	.....	2	3	7	8	....	....
38	35	0	2	7	4	.....	.....	1	3	6	5	....	....
39	38	0	1	8	5	.....	.....	2	3	7	7	....	....
40	39	0	3	7	6	.....	.....	1	2	5	6	....	....
41	40	0	2	6	5	.....	.....	2	3	5	5	....	....
42	50	0	1	5	5	.....	.....	1	3	5	4	....	....
43	50	0	2	6	5	.....	.....	1	3	6	5	....	....
44	70	0	1	7	7	.....	.....	2	3	8	8	....	....
45	72	0	2	7	8	.....	.....	1	3	7	8	....	....
46	25	0	2	7	4	.....	.....	4	5	6	4	....	....
47	20	0	2	8	3	4	4	2	3	7	8	8	4
48	30	0	3	7	5	4	4	1	2	7	6	5	4
49	30	0	2	7	5	4	4	2	4	7	6	5	4
50	19	0	1	8	3	4	4	2	3	8	8	8	5
51	23	0	3	8	6	5	4	2	6	8	6	4	4
52	24	0	1	8	6	5	4	2	3	7	5	3	2

an imitation of nature in its normal condition; the changes incident to age or disease are readily made, so that the appearance of the patient to herself and her friends is natural, and what would be expected and appropriate for her age, be she twenty or seventy-two.

The same lack of artistic knowledge is shown in shading the teeth in crown and bridge-work as in our dentures and the unsightly appearance of these teeth often mar what would otherwise be a beautiful piece of work. The same necessity exists for proper shading here as in dentures, and the natural appearance of the mouth when the teeth are properly selected is one of the principal differences between ordinary laboratory work and the product of the trained artistic dentist. I believe teeth can be arranged in classes so that an average shading for each temperament could be made, which would be a guide to help us in making up sets of teeth. I understand there might be some difficulty in manufacturing sets of teeth shaded up in this manner because of the uncertainty of the color of the tooth after fusing, but if there is a demand for them the teeth will be supplied from some source. I fully appreciate the fact that there is opportunity for an almost endless amount of work on this subject, and the data which I present to you to-night has required the examination of some three hundred mouths, but during my study of this subject I became so impressed with its importance and it so grew upon me that I decided to place the result before you in this somewhat incomplete condition.

The object of this paper is not to tell you just what shade of tooth should be used for different cases, but to awaken in the dentists a new interest in prosthetic dentistry, and especially in the artistic effects we can produce in our efforts to restore to faces their natural appearance. Art is to a large degree an unknown factor in the replacement of the dental organs, and if the dentists are ever to occupy the position which belongs to them as artists the present is the time to do so. There is a demand for the best efforts of the best men in our profession, and this demand will increase just so fast as we can demonstrate by our work that we are worthy of the name of artist.—*Review, April, 1901.*

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BACTERIA: THEIR ACTION IN THE MOUTH. By George Blumer, M.D., Albany, N. Y. Read before the Third and Fourth District Dental Societies, October, 1900. When I was asked to

prepare a paper for your society on the bacteria of the mouth, it was suggested that I preface it with a short review of the life history of bacteria in general. I shall therefore divide my paper into two parts, the first dealing with bacteria in general, the second having particular reference to the mouth bacteria and their relation to certain changes in the teeth and gums.

Life History of Microorganisms.—The organisms which we know as bacteria are now generally conceded to belong to the lowest form of vegetable life. They are of the simplest form, each consisting of a single cell, and they differ from some of the closely related but higher forms of vegetable cells only in that they do not contain chlorophyl, the green coloring matter of plants.

We divide bacteria into three main groups according to their form; the round or cocci, the rod-shaped or bacilli, and the spiral-shaped bacteria or spirilla. The three forms are often compared to a billiard-ball, a leadpencil and a corkscrew. We also classify bacteria according to their arrangement, for we find that different varieties are arranged differently, so that cocci may be found in pairs, in chains, in fours or in groups. I shall not go into the technical names of these groupings but merely mention them as one of the points of difference separating varieties of bacteria. The rod-shaped organisms may also be grouped variously, whilst the spiral ones differ both in grouping and in the looseness or tightness of the coiling. The bacteria belong to the fission fungi or organisms which reproduce by fission or splitting. Given a certain bacterium at its earliest stage of development, its life history consists in its growth to about double its original size, following which it splits through its middle into two equal halves, each of which is a new bacterium. This process of splitting is a rapid one, so that under favorable circumstances it occurs every half hour. Some studious German has figured that if a single bacterium could find conditions favorable to development for itself and its descendants for forty-eight hours, these latter at the end of that time would form a bulk sufficient to fill all the oceans in the world. Fortunately for us, there are constantly at work agencies harmful to bacteria which prevent any such development. The most important of these are desiccation, lack of suitable food, the action of sunlight and heat and the struggle for existence which goes on in bacteria just as in man, leading to the survival of the fittest.

There are certain forms of bacteria which when placed in unfavorable circumstances have a second means of reproduction, by means of bodies which are more resistant than the ordinary bacterial cell. These are egg-shaped bodies which form inside the bacteria and are known as spores. They constitute a resting stage and may be likened to the seeds of plants. So long as circumstances are unfavorable they remain as spores, but just so soon as they gain access to fresh food supplies they return to the bacterial state and the ordinary method of reproduction by fission.

Speaking from a chemical standpoint the food of bacteria is the same as that of man. They require food of certain chemical constituents just as we do, and grow best on diffusible albuminous substances, but as to the quantity and quality of food required there are marked individual differences in different bacteria. We have on the one hand the common water bacteria, which will grow comfortably in distilled water, and on the other certain disease bacteria, such as the leprosy bacillus, which grows only in the body and which we have never been able to cultivate artificially.

Three things are essential to the growth of all bacteria; namely food, moisture and warmth. The reaction of the food is of great importance, as most bacteria grow well only on neutral or slightly alkaline media. Some, however, can grow quite easily on an acid medium. The concentration of the food is also of great import, though there are marked differences in different bacteria in this regard. As a rule most organisms require a moderately concentrated medium. Excessive concentration prevents bacterial growth, and this fact is taken advantage of in the preservation of fruits by permeating them with a concentrated solution of sugar.

Beneficent Bacteria.—We hear so much of the relation of bacteria to disease that we are apt to overlook their useful functions. It is hardly possible in the time at our disposal to go into the question of the manifold functions of bacteria at any length. Their role in the growth of plants, changing the complex chemical substances of the soil into simpler ones, so that these latter can be absorbed by the roots, is absolutely essential to the existence of life on the globe. Their action in the decomposition of dead animal and vegetable products is almost equally important. Their uses in the manufacturing world, particularly in the various fermentation processes, are manifold. Of the various interesting but not particularly useful

functions, may be mentioned the formation of heat, which plays an important part in so-called spontaneous combustion, the formation of light which largely accounts for the phosphorescence of sea water, and the pigment production, which in the middle ages led to the miracles of bloody bread and meat and similar startling appearances. Of special interest to you as dentists are the bacteria which possess the power of setting free acids from the sugar and starches, and those that produce digestive ferments which act upon albuminous substances. The disease-producing bacteria are in a class by themselves, and at this time we can hardly go into any discussion of them.

The distribution of bacteria is widespread. In the air they are present in varying numbers according to season, location, wind and weather. Their number here is small as compared with that in the soil or in surface water, and as a rule the air bacteria are harmless. In the soil enormous numbers are present, largely of a harmless character, though the bacillus of tetanus or lockjaw, as well as a few other harmful ones, are constant inhabitants of soil. In surface water their presence is largely due to contamination from the soil, and to our unfortunate habit of emptying sewage and other polluted matter into the nearest stream. It is hardly necessary for me to recall to the dwellers in this part of the country the disastrous effects of such pollution. In the human body bacteria are found in all parts open to the air and to food, namely, the various canals and orifices opening into the surface of the body in its various parts. I will state here only that each separate part, as the mouth, the stomach, the intestine, has its own particular bacterial flora.

Infections of the Human Body.—And now before taking up the special part of our paper it may be well to briefly review the special factors concerned in the infection of the human body with bacteria. These may be summed up in a few sentences. On the part of the bacteria we require a certain dose and a certain strength, or as we say virulence, in each case. There is also necessary with certain ones a particular method of entrance to the body, as, for example, the typhoid bacillus must be introduced into the intestinal canal, as must the organism of cholera. On the other hand some, as the bacillus of tuberculosis, can attack any part of the body. On the part of the individual attacked we must have what we call a predisposition. This may be a local weakness in the form of a wound or

injury, or a general weakness, due perhaps to hereditary lack of vitality or to overwork, overcrowding, excess heat or cold or to a previous attack of some other disease. It is hardly necessary to state that different individuals and different races show great diversity in their susceptibility or lack of susceptibility to disease germs. One race may be almost immune to a disease which is very fatal to another; for example, the colored race is almost immune to yellow fever which is very fatal to whites. Then again one race may be liable to a disease in a much milder form than others, so that measles which with us is a relatively benign affection takes the form of a veritable scourge when it attacks the inhabitants of the South Sea Islands. The difference in individuals is well illustrated by the story of the four men who went fishing and got wet through to the skin. One had a bad cold, one had pneumonia, one had inflammatory rheumatism and the fourth escaped. It is impossible for us to explain these individual peculiarities in many instances, though at times they are doubtless hereditary, certain weaknesses being transmitted in families from generation to generation.

Bacteria of the Mouth.—Coming now to this question, it may be said that this cavity surpasses all others in the variety of its bacteria. While the number in the intestine is greater than that in the mouth, the variety is nothing like so great. This richness is not an inborn characteristic of the mouth, as it has been shown on various occasions that at the time of birth not only this but also the other cavities of the body are free from bacteria; it is due to the fact that the mouth is contaminated bacterially not only by the air, but also by the food and drink which are taken into its cavity. The necessities for bacterial life are present in the shape of food, moisture and warmth, and furthermore, the secretions of the mouth are of an alkaline reaction which is much more favorable to bacterial growth than an acid one such as is present in the stomach during digestion or in the upper part of the intestine. Various sources of food are present in the mouth. They may be enumerated as follows. The normal saliva. The mucus of the mouth. Desquamated mouth epithelium. The softened tooth substance. The exposed pulp in cavities. The small particles left over in the mouth after eating. The secretion from gums inflamed as the result of mechanical injury or disease.

If we examine microscopically a preparation of the saliva or of

scrapings from the tongue or teeth, we find present enormous numbers of bacteria of all kinds. Some are round, some are rod-shaped and some are oval. If we attempt to cultivate these we immediately find that two great groups are to be recognized—those which cannot be grown artificially and those which can. Our greatest knowledge of mouth bacteria naturally deals with the cultivatable bacteria, inasmuch as we are able to distinguish these from one another, not only by their form, but also by their growth characteristics and their action on animals. As a result of such examination we can again divide the mouth bacteria into harmless and harmful. Certain ones are found in every mouth. Miller, who has examined thousands of cases, gives six bacteria which are found in every instance. One of these is a rod-shaped organism, two are thread-like and of a higher variety than the true bacteria, two are spiral, and one is round. Their technical names are as follows: *Leptothrix innominata*, *Bacillus buccalis maximus*, *Leptothrix buccalis maxima*, *Iodococcus vaginatus*, *Spirillum sputigenum* and *Spirochaete dentium*. No one has ever been able to cultivate these artificially, and it is doubtful if they play any marked rôle in producing disease processes. Besides these there are frequently found others, of probably little pathogenic import, which can be cultivated. Some of these are found only in the mouth, as Miller's *Comma bacillus*, whilst others, as the ordinary hay bacillus, or the potato bacillus, are common inhabitants of the air.

Coming now to the question of disease-producing bacteria in the mouth, we find that many different varieties are frequent inhabitants. Thus the pneumococcus, the cause of acute pneumonia, is found in the mouths of a large percentage of healthy individuals, and many of these are virulent enough to kill inoculated animals. The ordinary pus-producing cocci are also present in many instances and are in a virulent condition in a fair percentage of cases. Besides these there are many unusual and some common disease-producers which may be present. The majority of these are not organisms producing single specific diseases, but rather bacteria capable of setting up inflammatory processes in the mouth cavity or the neighboring tissues. Occasionally specific disease-producing bacteria are present. Thus the diphtheria bacillus is found in the mouth or throat of a certain percentage of individuals long after an attack of diphtheria, and even at times in the throat of people

who have been in contact with diphtheria patients but have never had the disease. The tubercle bacillus has been found very frequently in tooth cavities in tuberculous individuals, also occasionally in healthy individuals. The organism causing actinomycosis in man, the same which causes lumpy jaw in cattle, has been found in a carious tooth in at least one instance.

Bacteria of Caries.—Regarding dental caries the majority of dental bacteriologists seem to agree with Miller that two forms of bacteria take part in this process. The first change, according to most writers, is produced by bacteria which have the power of producing fermentation of starches and sugars with the setting free of acids. It is particularly the varieties which set free lactic acid that play an important rôle. Miller was able to find in the mouth ten separate and distinct varieties which possessed the function of lactic acid fermentation. Their action on the teeth, according to Miller, Arkövy and others is to act upon the sugars and starches retained between the teeth and set free lactic acid. This in turn acts upon the enamel which is broken up and changed to a friable mass which falls or is ground away, leaving an opening communicating with the tooth substance proper.

The second group of bacteria which possess the power of producing digestive substances which act on albumens, now attack the exposed dentin and by the production of their digestive ferments soften and ultimately destroy it. The consensus of opinion regarding the rôle of bacteria in caries is that no one specific bacterium is responsible for either the first or second stage of the process, but that it is essentially a mixed infection due to many bacteria acting together. Of great practical importance in this connection is the fact that the caries bacteria are found in the canals of the teeth far beyond the point at which actual decay is to be made out with the naked eye, so that in order to remove them one must either excavate a shell of seemingly healthy tooth or destroy them by antiseptic solutions. I have understood that the latter method was the common one employed, and with the help of Dr. Canaday have made some cultures to illustrate the presence of bacteria in the walls of cavities after preparation for filling, and to show the effect of the ordinary methods of using antiseptics and also the effect of a more prolonged use assisted by hot air insufflation.

Effect of Antiseptics on Teeth.—The experiments were made by

taking small quantities of tooth dust drilled out with a sterile drill and making plates from it. In a minute quantity of dust removed from the wall of a prepared cavity I obtained 14,400 bacteria. In dust obtained from a similar cavity after the ordinary treatment with carbolic acid and clove oil I obtained 12,800 bacteria. In a cavity treated with a more prolonged use of the above antiseptics with hot air insufflation I found in a similar quantity of material 5,600 bacteria. This shows markedly the advantage of the last method of treatment, but indicates that even it does not entirely remove bacteria.

Miller in his work gives excellent illustrations showing the different forms of bacteria in the pulp-channels. All varieties are present, but mainly the rod-shaped and round forms, and those different ones have not as a rule received specific names, but are merely labelled as bacillus or coccus of tooth caries with a Greek or Latin letter prefixed to distinguish one from the other.

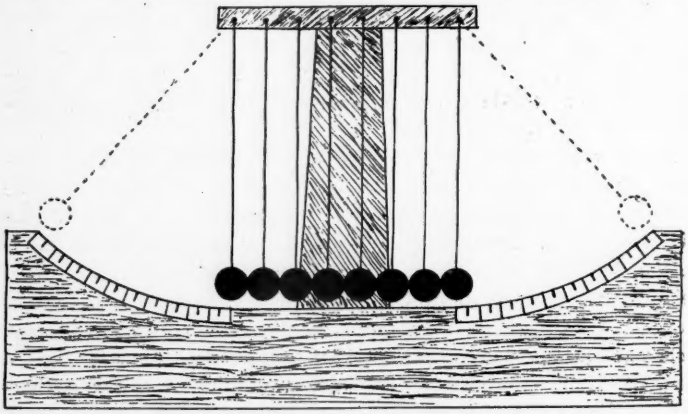
As distinguished from ordinary caries, abscess formation and gangrene of the pulp seem to be separate forms of infection. In both instances we are dealing with mixed infections, but in the abscesses the common pus-producing cocci predominate, whilst in gangrenous processes Arkövy claims to have found as the predominating organism a bacillus which he calls the *Bacillus gangrenae pulpae*. An interesting fact is brought out in connection with this disease by Arkövy. He evidently realized the fact just illustrated that the ordinary antiseptics did not reach and kill all the bacteria in an infected tooth after the usual precautions. He instituted in cases of gangrene which he reports a temporary antiseptic filling consisting of camphor, pure carbolic acid and oil of eucalyptus. This was mixed into a gummy mass and covered with an occlusive filling of asbestos or gutta-percha. In some instances after such antiseptics had been in a cavity three and one-half months he was still able to find bacteria, and at times in good numbers. Writers since Arkövy have not confirmed his observation regarding the presence of his *Bacillus gangrenae pulpae* in gangrenous pulpitis. Zierler claims to have found with this organism a spore-forming bacillus, and Sieberth, who has recently examined the pulps of 134 diseased teeth, claims that neither of these bacteria is to be found constantly, and that a small streptococcus is the cause of both gangrenous pulpitis and dental caries.

The disease known as pyorrhea alveolaris seems to have excited

considerable discussion as to its origin. Galippe and Miller both made careful bacteriological studies of this infection, and both came to the conclusion that like caries and gangrene of the teeth pyorrhea is a mixed infection. Galippe found most constantly among the organisms present the *streptococcus pyogenes*, which is one of the pus-producing organisms and the cause of erysipelas. Miller found this and other pus organisms occasionally but mainly isolated other bacteria, some of which produced inflammation when injected into animals and others of which did not. Fenchel isolated the pus cocci in a number of cases and thought them the cause of the disease. Schreyer found the pneumococcus in sixteen out of twenty cases. Summing the matter up in his clear manner, Miller concludes that the factors playing a part in this disease are threefold, namely: 1. General predisposition (from rickets, gout, syphilis, etc.). 2. Local injuries. 3. Bacteria.

A few words may be said of less frequent or less important bacterial diseases found in the teeth. Pulp-stones are stated by some authors, as Cunningham, Robinson and Miller, to be of probable bacterial origin. I was unable to obtain any record of recent observations on this subject, but it is of interest to know that certain other forms of stones, particularly gall-stones, are now held to be of bacterial origin. The stones are not composed of bacteria alone, but are generally indirectly the result of their action, being due to the deposit of lime or other salts in tissue injured or killed by bacterial poisons. The pigmentation of yellowish or greenish discoloration of carious teeth is also probably of bacterial origin. Several of the caries-producing bacteria elaborate a brownish pigment, and in pulpitis the *bacillus pyocyaneus* is sometimes present, which is well known to bacteriologists as a pigment production. Finally, mention must be made of bacterial diseases secondary to affection of the teeth and occurring in neighboring organs. Such for example are osteomyelitis of the bones of the jaw, inflammation of the antrum, and inflammation of the soft parts, particularly of the floor of the mouth. Some of these secondary infections are of great and even fatal severity. They are in all instances due to the pus cocci or the diplococcus of pneumonia. Some authors as Franke-Hochwart regard the neuralgia following the extraction of teeth as being of bacterial origin. The gravity of such complications is but imperfectly recognized by the medical profession.—*Items, April, 1901.*

KINETICS OF THE MALLET. By Dr. C. H. Stearns, Owatonna, Minn. Read before the Minnesota State Dental Society. There are but two points in the mallet which affect the character of the blow; the weight and the material. The first is of account because it determines the velocity, and the velocity determines the character. According to the law, the kinetic energy of a moving body is proportionate to the mass and square of the velocity conjointly. As per example: A mass of 1 lb. moving 1 ft. per second equals 1 ft. lb. A mass of 10 lbs. moving 1 ft. per second equals 10 ft. lb. A mass of 1 lb. moving 10 ft. per second equals 100 ft.



lb. Therefore, taking two mallets, one weighing eight and the other one-half oz., considering them as regards the amount of energy developed, we find that the lighter one has but to be given four times the velocity to develop the same amount of energy. Right here, however, we find another law operative, that is, upon the impact of two bodies where the coefficient of restitution is low, the dispersion of the lines of force is directly as the mass of the impacting body, and indirectly as its velocity; thus—a 100 lb. blow from a 10 lb. body will penetrate ten times as far as a 100 lb. blow from a 1 lb. body, providing that ideal conditions could be obtained. These laws act in two ways to affect the character of the blow: First, by enabling the lighter mallet to do the same amount of work with much less energy. Second, by enabling it to develop a much greater energy with the same dispersion of the lines of force.

The quality of the material of which the mallet is made, with regard to its elasticity, affects the quality of the blow in two ways. First, where the coefficient of restitution is low, by absorbing a larger proportion of the energy in producing change of form, thereby extending the period of transference of the balance of the energy, resulting in the utilization of a much smaller amount of the total energy expended in the accomplishment of the work. Second, where the coefficient is high, the amplitude of the change and restoration determines the time of transference. Consequently the concentration of dispersion of the lines of force, and the proportion

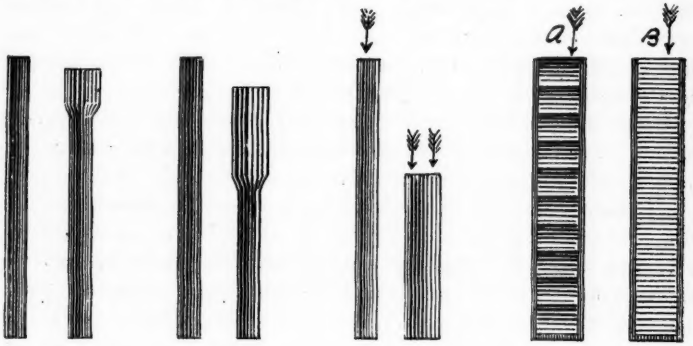


Fig 1 Fig 2 Fig 3 Fig 4

utilized, or in other words, which receives the greater proportion of the blow, the gold or the patient?

Taking the above for a test, we conclude: The lighter the mallet, consistent with practice, the harder the surface, and the higher the coefficient of restitution the greater the proportion of energy developed absorbed by the gold. The heavier the mallet the softer the material; the lower the coefficient the greater the proportion received by the patient.

Demonstration.—We have an apparatus familiar to every student of elementary physics, only in this case the balls are made of hardened steel. They are, in fact, antifriction balls, such as are used in turntables, etc.; the same as in bicycles, except these are larger. Steel is used because it combines the highest coefficient with the least amplitude. A scale is added at either end for convenience in measuring the reaction. For the first experiment we lift one ball

to the full length of the scale and let it fall. As a result of the impact the opposite ball flies off almost to the full length of the scale, and as it drops back the operation is repeated again and again, until they gradually come to rest. But we find only two balls are affected—those on the outside—the other six remaining at rest.

From this we can make several deductions. The principal one is, that in using the mallet on a steel plugger the force is transmitted almost entirely, so that we may consider the blow as delivered directly on the filling. Next we see that the penetration of the force of the blow depends entirely on the weight of the body delivering it. Thus—we raise two balls, letting them fall together, we see the same phenomena repeated except that two balls are driven off from the other end, and they gradually come to rest as before, but always two balls moving from each end. And the same with three balls. We thus show that the penetration of the blow depends entirely on the weight of the moving body, and that the tension or intensity of the force depends on the velocity.

We now take a lead ball weighing 1½ times the steel ones, but with a very low coefficient. Letting it fall as before we see that it moves the further ball less than half the length of the scale, showing a low tension but deep penetration, as three balls are moved. We now cover the steel ball with a section of a rubber bulb, making a high coefficient with a wide amplitude of change. Letting it fall as before we find the tension is very slight, the last ball moving but a short distance. The penetration is, however, far beyond the ability of the apparatus to measure, as all the balls move as one.

Discussion.—Dr. C. W. Jones: There is one point I want to mention about the law Dr. Stearns brought out in relation to measuring the foot power in a body moving horizontally. You mean lifting against gravity, don't you? In studying Dr. Stearns' paper, I casually mentioned the subject to the chief engineer of one of our great railroad systems, and to whom I am indebted for a few practical illustrations of the use of force for impaction. In the construction of bridges, bridge-builders use steel rods which have to be threaded at the ends, and in threading the end of a rod of equal diameter throughout it would make the cross section smaller. Therefore, to preserve an equal strength throughout the length of the rod, the end of the rod is enlarged and then threaded as in Fig. 1. For this purpose a light hammer, usually pneumatic, with

high velocity is used on the end of the rod which thickens the end of the rod just far enough for the purpose intended. If a heavy hammer were used the thickening or enlarging of the rod would be carried proportionately a greater distance from the end of the road, as in Fig. 2. Again, if hydraulic pressure were used on the end of the rod it would be enlarged and shortened its entire length, providing it could be maintained rigidly without bending, as in Fig. 3.

In driving piles the use of a light hammer with high velocity has the effect of battering down the head of the pile without driving it into the ground; while a heavy hammer with low velocity causes the pile to penetrate the ground with practically no battering of its head. In some careful experiments made at Portsmouth Navy Yard, England, a man of medium strength striking with a maul weighing 18 pounds, the handle of which was 44 inches long, started a bolt one-eighth inch at each blow. It required a quiet pressure of 107 tons to press the bolt down the same quantity.

From these illustrations it is evident to me that we need at least three mallets of different weights for our use in impacting gold into a tooth, our own judgment telling us which weight is best for the purpose intended. If we are using large pellets of gold and wish the force to penetrate the entire mass of the filling, a heavy mallet or hand pressure would be the proper thing. If we are building up or contouring with ordinary sized pieces of gold, a medium-weight mallet should be used. While for making an exceedingly dense surface a light-weight mallet with high velocity is the best. If, for instance, we were to condense gold in a steel tube, using large pellets of gold and a very light hammer, the result would be as shown in A, Fig. 4, each pellet being condensed more on the surface than at the bottom, while if a heavy mallet or hand pressure was used the result would be an even condensation throughout, as in B, Fig. 4.

Dr. Black has invented an instrument by means of which he can measure the exact amount of force necessary for the impaction of gold. The question was asked, whether a plugger with ten pounds hand pressure would have the same effect as ten pounds applied with high velocity of a mallet. Dr. Black thought there was no difference. I think the effect must be different, as proven by the illustration of the man striking the bolt with a hammer weighing eighteen pounds. It is hardly probable that the force which started the bolt would equal 107 tons.—*Review, April, 1901.*

HYPERTROPHY OF THE GUMS. By W. J. Roe, M.D., D.D.S., Philadelphia. Read before Pennsylvania State Dental Society, July 5, 1900. There are two forms of this disease—true hypertrophy of the gums, which is a very rare affection and which forms the subject of this paper, and localized hypertrophy from prolonged irritation, which is frequent and of little pathological or clinical interest. Up to the present time I have found only twelve cases mentioned in the literature. Dr. Pearson says he knows of no such condition occurring in the lower animals, and if it occurs at all it must be as rare as it is in the human family.

The table of recorded cases includes the two of my own. Of the fourteen cases, five were males and nine were females. The condition was first noticed in eight cases during the first year, in two during the third year, one at six years, and one at nine. In thirteen cases both gums were involved, and in one the inferior right half only. Eight were operated upon; in six the gums, teeth and alveolar process were removed, and recurrence was noted in two cases. In one case the gums were removed and recurrence took place, and in one case the gums and teeth were removed, no recurrence following. Two cases were associated with epilepsy and three with molluscum fibrosum. Physical and mental conditions were normal in six cases; defective mental condition was noted in four, and defective physical condition in two.

The disease was localized in the beginning to a portion of the gums, but slowly involved the greater portion or all of the gums except in one case. It was most marked about the gingival border of the gums. It was neither painful nor tender, and seldom gave rise to hemorrhage. The appearance of the gums was similar in all cases—about the color of the normal mucous membrane and irregularly lobulated, producing deformity in proportion to the extent of the development of the hypertrophy, such as bulging the cheeks and lips, or separation of the lips and jaws, or protrusion of the gums. It was tense and inelastic, and partially or completely covered the teeth, some of which were carried out of their sockets and held by the gum-tissue, but were quite movable. Mastication, deglutition and speech were proportionately interfered with, but no constitutional symptoms were manifest.

Case I.—My first case was brought to me by Dr. John E. Evans of Ohio. Mrs. L., married, aged forty years, born in Wales. She

first noticed the trouble before her ninth year. Her physical and mental conditions were normal, except that she was slightly anemic in appearance. She had lost all of her upper teeth, only four lower teeth remaining, and she consulted Dr. Evans to know if she could wear artificial teeth. The gums of the maxilla and mandible were involved; were slightly paler than the normal mucous membrane, with an irregularly elevated or lobulated appearance, and quite dense and inelastic. Those of the maxilla were thicker and extended over the alveolar ridge and the greater portion of the hard palate, varying from one-fourth to three-fourths of an inch in depth. On the mandible the hypertrophied gum extended from ramus to ramus. One incisor, a cuspid, and a bicuspid still remained, but were lifted out of their sockets and could be moved easily in the thickened gum-tissue. The third molar on the right side was in its normal position and firm, but almost completely covered by gum-tissue. All four teeth were free from caries. She had never suffered any pain or inconvenience from the gums other than mechanical, and there was no tendency to hemorrhage. There was some fullness and bulging of cheeks and lips. Heart, lungs and kidneys were normal.

On March 13, 1894, I operated. Ether was administered. I removed with scissors and scalpel all the gum-tissue and most of the periosteum, together with the three loose teeth, their sockets having been obliterated, and the alveolar process was practically in the same condition as though the teeth had previously been extracted. The third molar was then extracted. The hemorrhage which was caused by general oozing was readily controlled by pressure with gauze sponges. There was no evidence of bone involvement and I therefore did not remove any portion of it. There was practically no loss of blood after completing the operation. She was given a mouth-wash—equal parts saturated solution boric acid and listerin—and in about two weeks the bone was covered with a new membrane which looked normal. During the first week in the following June Dr. Evans made and inserted a full upper and lower denture. He last saw her in June, 1895, and she was wearing her plates with perfect satisfaction, and there was then no evidence of any return of the hypertrophy.

Case II.—My second case was referred to my surgical clinic in December, 1899. I deferred operation, believing that the con-

dition progressed so slowly that I was justified in doing so. Walter K., born December 19, 1887. His parents are both living and have always been very healthy. His mother's mother is still living; his mother's father died of dropsy, aged sixty-six. Walter is the eldest of four children, the other three being perfectly healthy. He had whooping-cough in 1891, measles in 1892, mumps in 1893, was vaccinated and had the scarlet fever in 1894. About six years ago his father noticed some thickening of the mucous membrane about the region of the lower first molar on the right side. Two years ago his father took him to a dentist, who extracted the two upper first molars, they being badly decayed. Six months later he consulted another dentist, who extracted the second inferior bicuspid on the right side. This tooth is said to have been free of caries. He undoubtedly had an attack of thrush about one and a half years ago. When I first saw the patient the gums in the molar and bicuspid regions on the right side of the mandible were greatly thickened. The two roots of the first molar were present, and there was some inflammation in the gums. I advised extraction of the roots and told the patient to return if the same condition of the gums continued. He returned in May and I found the hypertrophy had increased rapidly and involved the upper and lower gums on the right side, extending to the left cuspid, most marked in the bicuspid and molar regions. In color the gum is of a pale pink, closely resembling the normal mucous membrane. Its thickest portion is one inch wide, extending about an equal distance upon the palatal or lingual and labial or buccal surfaces. The superior second bicuspid on the right side is carried downward and is quite movable, also the first bicuspid and second molar to a slighter extent. The gum-tissue is firm and inelastic, and has never given him pain or been tender to touch even in mastication, nor have the gums bled. His physical and mental condition is excellent. Careful examination failed to show any syphilitic or tuberculous infection in the family, with the exception of an abscess in the thigh of one of the other children two years ago, which might possibly have been tuberculous, but which healed rapidly after it was incised and drained.

Under local anesthesia by eucain I removed a portion of gum-tissue from the palatal surface of the maxilla for examination. The piece was fixed in Heidenhain's bichlorid of mercury solution,

dehydrated in alcohol and imbedded in paraffin. Sections were made and stained with hematoxylin and eosin, hematoxylin and picric acid, toluidin blue and eosin, and toluidin blue alone. Some sections were stained by Weigert's method for bacteria, and others for tubercle bacilli.

Histological Examination.—The sections for convenience of description are divided into two parts. The first is composed of squamous epithelial cells, which cover three borders of the sections. These practically show nothing that in any way deviates from the cells which cover a normal gum. The second (corresponding to the tunica propria) is subdivided into two layers; the first, a thin layer, is composed of a very loosely woven fibrous connective tissue. In this there are numerous small bloodvessels. The number is such that it suggests an abnormal vascularity. In this layer are found many lymphoid cells, many plasma cells, a few mast cells, a considerable number of leucocytes, and many connective-tissue cells. The lymphoid cells originate largely from the lymph glands of the body and are abundantly present in inflammatory conditions. Although the origin of the plasma cells is not definitely known, in a recent paper Dr. H. F. Harris claims that v. Marschalko has advanced overwhelming proof that they are a specialized form of lymphoid cells. In the same paper Dr. Harris says that these cells are apparently not present in the normal human organism, but are present invariably during an inflammatory condition. He also says that although they begin to appear in tissue almost immediately following an injury of any kind, they do not become numerous until the condition becomes subacute or chronic and the process of repair begins. As to their function, all are agreed that they ultimately become connective-tissue cells. The mast cells occur in the connective tissue of the body, but are increased when a part is subjected to continued irritation or in certain acute inflammatory conditions. Dr. Harris has demonstrated that these cells elaborate mucin of the connective tissue. The leucocytes are present abundantly in inflamed tissue. The connective-tissue cells are present in all connective tissue of the body, and probably are connected with maintaining the nutrition of this tissue.

The second, a deeper layer, which occupies the deeper parts of the sections, is composed of a much denser connective tissue than

that of the first layer. Here the bloodvessels are not so abundant, but the cells are present in much greater number. The same kinds of cells are found here as in the first layer. Here and there the connective tissue incloses nests of cells which resemble carcinomatous structure. Close examination reveals that the cells inclosed are not epithelial; thus the suspicion of cancer can be put aside. At other places there are collections of cells that resemble a lymph gland. These collections are largely composed of lymphoid cells. Scattered throughout this layer there is considerable adipose tissue, which apparently is being replaced by connective tissue, as the adipose cells appear to be encroached upon.

Bacteriological Examination.—The inoculation from the incised gum developed a whitish, scanty, granular growth, and upon microscopic examination was found, morphologically and tinctorially, to resemble the streptococcus pyogenes. No cocci were found in the sections. No tubercle bacilli were demonstrable in the section stained for that purpose. In the sections stained by Weigert's method many yeast fungi were found.

Remarks.—In the study of this interesting condition from the recorded cases there are many questions arising, such as, What is the pathology, and what is the proper treatment? I believe that the saccharomycetes or yeast fungus is the cause of this condition. Dr. Gross reported the first case, and he believed it to be congenital in origin: "It first began to attract attention at the age of nine months, but there can be no doubt from its history that it had existed from birth." With this possible exception, in none of the recorded cases has it been shown that the affection was present at birth. In Dr. Murray's report of the three cases occurring in the same family, and which were associated with molluscum fibrosum, he gives two possible factors: First, bad hygienic conditions, and second, parental consanguinity, as the parents were first cousins. In both of my cases the hygienic surroundings were as good as with the majority of persons. In none of the other cases has the second factor (parental consanguinity) been present. Further, clinically Dr. Murray's cases support my own belief, and it will be shown that molluscum fibrosum is caused by some form of the yeast fungi, and that his cases afforded unusually favorable soil for the development of the microorganisms, although in no other cases of molluscum fibrosum has there been hypertrophy of the gums.

To prove beyond doubt the pathogenesis of the saccharomycetes with hypertrophy of the gums it will be necessary to complete the circuit of Koch. The fact that the disease is so rare, and only found in the human race, almost precludes the possibility of artificially producing it. In the first place it is evident that individual susceptibility is very rare; in the second place, artificial inoculation would scarcely be justifiable. If this condition were ever present in the lower animals the way would be clear to produce it artificially, as cultures could readily be taken from the gums in this case and grown in artificial media. It is highly probable that there is not sufficient fermentable saccharin fluid in the living tissue to sufficiently nourish the yeast fungi. In many portions of the alimentary canal saccharin fluids remain long enough for fermentation to occur. "In the stomach budding fungi are almost always to be found." (Ziegler.) The favorite site of the saccharomycetes is in the oral cavity. "As disease-producers the Mucorinæ and Saccharomycetes are much less important than the Schizomycetes, since only a few forms can be reproduced within the human body, and since those which do so multiply always develop only in a very limited area, the disease produced remains a purely local one. Finally, they do not produce poisons which are capable of acting upon the entire organism, or upon the nervous system, or upon the blood, but, at most, substances which act only upon the tissues in the near neighborhood of the filaments. They can therefore produce only *local infectious diseases.*" (Ziegler.)

These microorganisms may enter the organism at points which are accessible for ordinary bacteria, the changes which they produce in the tissues tending to excite a mild form of inflammation; and only in very rare instances have these organisms been noted as having been carried to other portions of the body through the lymph or blood channels. The clear history in my second case of an attack of thrush—the histological examination showing unmistakable evidence of prolonged irritation and inflammation, and the bacteriological examination showing the presence of numerous yeast fungi in the tissues—strongly points to the pathogenesis. As regards the proper treatment, it seems to me that until it is clearly proved that the alveolar process or bone is involved it is a needless sacrifice to remove any but the gum-tissue and teeth that are too loose to be retained in the process. In Salter's report of Pollock's

case he said the alveolar process was extended and prolonged. In my first case there was no evidence of involvement of the bone, and as there has been no recurrence and it is more than six years since the operation was performed, I do not intend to remove anything in this second case but the gum-tissue and periosteum and any loose teeth that cannot be retained. I will then make a further and probably more complete study of the tissues removed.

Conclusion.—The pathology in this case indicates that this disease is not a true hypertrophy, but should be classed with the infectious granulomata; and in keeping with the established nomenclature I would propose calling it *Saccharomycosis*, caused by saccharomycetes.—*Cosmos, April, 1901.*

* * *

PORCELAIN INLAYS BY THE WATER-BAG METHOD. By I. N. Broomell, D.D.S., Philadelphia. Read before Pennsylvania State Dental Society, July 5, 1900. The principles involved in this method, which, it must be understood, refers to the formation of the matrix only, are closely allied to the process of swaging with the shot apparatus, which includes in both instances a complete envelopment of the object to be swaged by the swaging force and an equalized pressure in all directions at the same time. The term "water-bag" method does not very fully describe the process, but it does so to exactly the same extent as does the term "shot" swaging method to that process. The water-bag is the essential factor in the work, all other parts being purely auxiliary.

The apparatus consists of four parts, a plunger, a soft rubber block or water-bag, a bed-plate, and a basal portion into which the other parts are fitted. To make use of this device the cavity is prepared in the same manner as for inlay work in general; that is, without undercuts and the margins clear cut and without bevel. Disregarding the subject of space, which is requisite in this as well as in all inlay-making when the cavity is situated approximately, you proceed to take an impression of the cavity with wax or impression composition, including in this impression as much of the surface of the tooth as it is possible to obtain, this latter detail serving as a guide for contour, fullness, etc. The concave surface of the bed-plate is next prepared for the reception and ready removal of a body of plaster of paris. While this body of plaster is yet soft the wax plug carrying the impression of the cavity and associ-

ated tooth surface is carefully forced into it, with the result of forming a plaster duplicate of the cavity and tooth. The work now proceeds in a manner somewhat similar to that of forming a metallic matrix in the mouth. Take a piece of gold or platinum foil somewhat larger than the cavity and trim it to a circular form. This precaution of trimming the foil to a circular form is one which profiteth much, all angular parts about the periphery of the metal sheet serving, as they do in swaging ordinary metal plates, as points of resistance and materially interfering with the ready adaptation of the metal to the parts. The metal sheet is slightly depressed into the plaster cavity by guarded pressure from a ball of cotton or other suitable medium, keeping this up until a considerable portion of the metal is brought into contact with the bottom of the cavity, thus reducing to a minimum the possibility of tearing the foil. The rupture of the foil at the point of greatest strain is, however, not a serious complication, as it may readily be bridged over by the porcelain and no harm will result during the baking process. With the foil roughly shaped to the plaster cavity, the swaging apparatus is next used to complete the formation of the matrix. The plaster reproduction of the tooth and cavity, together with the bed-plate, are placed in position in the cylinder, and upon these is placed the rubber water-bag attached to the metal plunger. The entire apparatus is then placed on an anvil or other equally solid foundation and the swaging force applied.

The swaging force may be either the blow from a heavy swaging hammer or it may be made by some slow, gradual pressure. A novel but very effectual method of applying the swaging force is that afforded by the downward pressure of a modern operating chair, placing the swager on the circular base surrounding the piston of the chair and gradually allowing the chair to descend upon it. After the swaging is completed the plaster form is removed from the bed-plate, and it will be noted that the foil has been forced into very close contact with all parts of the plaster cavity. Without removing matrix from plaster, the unbaked porcelain is inserted as usual and plaster and matrix transferred to furnace.

It is a common rule of technics that all new methods to be of any practical value must possess some advantages over those already in use, and I shall therefore briefly enumerate the qualifications which warrant the recognition of the system just described: First. *Adaptability.* The foil is evenly and accurately swaged into and about the margins of the cavity, and being held in this form by the plaster mold it is unalterable. Second. The entire surface of the foil being acted upon by an equalized pressure at the same time results in a matrix free from springiness. Third. There is no withdrawal of the matrix from the cavity, consequently no alteration in its shape. Fourth. The work may be accomplished away from the mouth and during the patient's absence.—*Cosmos, April, 1901.*

Letters.

BALTIMORE LETTER.

BALTIMORE, June 8, 1901.

Dear Digest:

A strange thing has happened—one of those "New Jersey Hornets" came down to our meeting and brought Oriole a dozen neckties. (You know it's a desecration of nature to change the color of a bird.) I wore one of these neckties this morning and looked and felt like a jaybird; changed this afternoon and anyone would have taken me for a "Kentucky Cardinal." Have two of them on now, appropriate to my native colors, and am writing this letter to see whether I am a real oriole. If it should resemble the product of a crow, you eat it with what sauce you please, for surely you are the instigator of it.

Judging from the aftermath our "union meeting" was a great success. From the standpoint of the critic it did not all go just right, but the tout ensemble was good. The presidential addresses (one of welcome, the other a response) were graceful and scholarly. A ring of cordial friendship and interdependence between Washington and Maryland members could not be mistaken. It is a grateful reflection that this partnership, which has lasted now five years, has brought the members of the two societies into bonds of closer friendship, and made possible wider professional activity.

It is easy to see by a glance at the program that too much work was cut out—it could not all be pulled off; but its announcement served to give varied interest to those who attended, and just enough defaulted to enable the officers with a little rush to complete the program in the time allowed. It was perhaps unfortunate that discussion had to be abridged, but I have yet to see a meeting that was really damaged by sharp, snappy management. It is good training to have to say what you want to say in a few words; it culls out the "and-a's" and "ahems," which, to say the least, are more characteristic than edifying. The audience does not tire of short talks to the point, while prolixity and verbosity will kill any meeting. Some of the old stagers were not so much in evidence as usual. We would not be willing to part with these old friends—they give picturesqueness to the occasion; but there is a sameness about

their talk, or should we say their willingness to talk, that cuts out and discourages the youngster or new member, not so much at his ease.

The first paper, by Dr. Griswold, did not elicit much discussion, but later when the accompanying models and appliances were exhibited much interest was manifested. Oriole did not look critically into this work, but Dr. Griswold evidently thinks he has an ideal system of bridgework, or he would not leave a lucrative practice and travel as he has for the past six months all over the world to exhibit it.

Dr. Trueman, that doughty little champion of free and often sharp speech, had a good title—"Some Mechanical Problems Involved in Tooth Destruction and Tooth Salvation," and the Doctor, a charming gentleman, read a good paper, even if it was over some of our heads. The reader's voice was not strong, and the acoustics of the hall abominable, consequently no discussion followed, but when the paper is published it will be an honor to our society.

Much interest attached to the paper of Dr. Fannie Hoopes on "Adenoids," and she handled the subject well. Some of the visitors advocated operations by the dentist, we dissent; diagnose, and refer to a specialist. Let the dentist practice dentistry or a specialty of it; don't make the field too wide or try to do too much.

Dr. Roach came near having a fight on his hands in "Treating the Sixth Year Molar." They mauled and hammered at him, misconstrued and misunderstood him, but he bobbed up with explanations and models to prove his position, and seemed to come off with credit. It appeared to Oriole that not a little was said here for sake of argument. Antagonistic positions were taken and held, when at the bottom little difference of opinion existed. Oriole never expects to see a rule formulated for the management of all first permanent molars. Dr. L. C. Taylor of Hartford, Conn., read a good paper on "Some Phases of Oral Hygiene," and later Dr. D. D. Smith of Philadelphia handled the same subject and the previous essayist, without gloves. Undoubtedly to Dr. Smith belongs much of the credit for the development of interest in what we may call oral housecleaning reduced to a fine art, and I have never talked with Dr. Taylor when he did not give him credit. It is to be hoped therefore that he will not take Dr. S. too seriously. Dr. Smith is perhaps the cleanest man of Oriole's acquaintance, a good debater,

and carries not a chip but a little piece of onyx on each shoulder; now don't touch it. Not that he lacks a loving heart and a fraternal feeling, but he likes to do things that he does well; and if you don't think he can debate, well just invite him West. I'd like to come along and see the fun. Then again there is a vital importance to the teaching that Dr. Smith is doing; it has been too long neglected.

A paper of great merit was read by Dr. C. W. Mitchell on "Effects of Artificial Foods Upon the Teeth." Nothing could be of more abiding interest to the dentist. Look out for the paper and read it.

Dr. W. G. Foster described interestingly his experience with the "Hunter System of Nitrous Oxid Gas Administration" (by the nose), in which considerable interest was taken. Our old friend, Dr. J. D. Thomas of Philadelphia, added to this by his discussion of the general subject of nitrous oxid.

It would be impossible to give any adequate or intelligent comment upon the other papers. Not that they were any the less worthy of notice, but we don't want you to have to publish a special edition for Oriole. Suffice it to say, that thirteen other essayists read interesting and instructive papers.

The clinics were great, thirty-five of them. You could scarcely move around, though the hall was large. Those who were seeking wrinkles could not take all in, but all expressed themselves as amply repaid for coming; any description is out of the question.

The exhibits were numerous, and those in control showed in addition to their wares a commendable willingness to yield to the hours for work and be content with off times to talk business.

The excursion to Annapolis was an unparalleled success, barring two unfortunate occurrences. First, in the start, one of the guests, who came from the greatest distance, undertook to implant a tooth in a private office for a patient living in Washington. Owing to a mishap in the first attempt, a delay was occasioned, and of course we could not leave the Doctor who had spent his money to come so far to entertain and instruct us. A wait of forty-five minutes without this explanation was hard to stand, because we missed a part of the baseball game. Misfortune number two—we tried to have toasts on the boat coming home and it was too noisy. But after all we had a jolly time, saw some baseball, and the historic old state-house where

Washington resigned his commission. The boat was full of professional and amateur entertainers; music, songs, minstrelsy, stories everywhere and all good. Home was reached at eleven, all tired but grateful.

This illustration shows a photograph of a bronze tablet erected in the infirmary of the Baltimore College of Dental Surgery. For us much interest should attach to these faces. The united effort of these two men, Chapin A. Harris and Horace H. Hayden, organized the first dental college, published the first dental journal, and traveled to what was then far from New York to assist in organizing the first dental society. They conceived and executed the beginning. They were not always the best of friends, but they separately and jointly put forth their best effort.

Mr. Ernest Keyser, the sculptor, would like to furnish copies to be erected in every institution of dental learning. The University of Maryland has already through Dr. Grieves erected one. Indeed,

the Doctor, I think, first suggested the idea of combining the two heads—the first design was for the head of Harris alone. It is fit that they should be together.

The tablet in the Baltimore college was paid for in part by money secured from the Snowden & Cowman Co., a fund raised by popular subscription from the dentists, and subsequently divided equally between the Baltimore College of Dental Surgery and the University of Maryland Dental Department. The major part of the money was raised some years ago by a concert held under the auspices of the Chapin A. Harris Memorial Association, the original intention of whose promoters was the erection in the Baltimore College of a memorial to Chapin A. Harris.

Oriole has been to Boston again to discuss Dental Education, and would like to add some comments, but he has only four pages; then again he must mention a letter received from DIGEST'S New York correspondent. At first reading he was disposed to think his life was threatened, but after reading it over seven or eight times it seemed only a complimentary and fraternal effusion, with very pretty and nice things very agreeably said. It is more than interesting to be in touch with the ramifications of DIGEST'S influence and work. New York wants only a typewriter, and at his age, seventy, you might lend him one. This beneficent action would be an additional inducement for you to be good, and thus keep in touch with one who has tried and succeeded sometimes.

ORIOLE.

NEW YORK LETTER.

NEW YORK, June 6, 1901.

To the Editor of the Digest,

MR. EDITOR: Dr. S. G. Perry is giving us an easy and full flow of ink nowadays. He is full of it—not the ink, but his subject. In discussing the question of patents, he states that if you wish an article put on the market and brought into general usefulness it should be patented. He has recently devised a right-angle mallet which does beautiful work, as was seen at the last meeting of the Odontological Society, where a large attendance listened to hear him give "Some Thoughts on Packing Gold." He emphasized filling the cavity, that is, putting in all the gold possible and then packing it well to place.

We see that another veteran has gone—Dr. E. J. Dunning, for many years an eminent practitioner in this city. He stood for the best as he understood it, but did not affiliate with the Atkinson school. He accepted neither the rubber-dam nor dental engine, yet served his patients well and received liberal fees. For many years Dr. Dunning carried on a sort of school in his own office, always keeping a few students under his immediate instruction. They entered upon the practice of dentistry much better prepared than the ordinary student.

"We deeply feel the loss in Dr. McKellops' death, for the profession never had a more genial member. His skill with gold was remarkable, but he prided himself on never having put in an amalgam filling. It is reported that some years ago he unwillingly took some mining stock in payment of an old bill. The stock lay idle for a considerable period, but suddenly became of value and proved a veritable mine.

We notice in the newspaper report of the funeral of Dr. C. A. Burt, who died recently in this city, that "he numbered among his patients William Cullen Bryant, Jay Gould, George M. Pullman, W. H. Vanderbilt, John D. Rockefeller, P. D. Armour, B. T. Babbitt," etc. Such a notice does much injustice to the decedent, for every dentist knows that no practitioner in this country probably ever drew to himself such an assortment of rich and distinguished men. Without meaning any disrespect to Dr. Burt or even referring to him, it does seem as if the small men get the big ads at death in the newspapers. We often think of the two-line notice that was given the late Dr. Atkinson, but it meant a great deal, for in it he was called "a teacher of teachers."

An editorial in one of the New York papers states that "army dentists will be permitted to wear the uniform of assistant surgeon with the rank of first lieutenant, except that the shoulder straps are to be in silver instead of gold. There is a marked inappropriateness in denying to a dentist the use of gold in his insignia, since the gold filling is the badge of all his tribe. If he cannot wear shoulder straps of gold he ought at least to be allowed to have them made of amalgam." We do not quote this as a witticism, but as an example of how dentists are viewed by the public. According to report, there has not been a high standard of ability offered for this service.

We heartily commend the editorial in the May *International*, "Is the Result Worthy the Effort," referring to the matter of bogus diplomas in Europe and the rather too great zeal of the Foreign Relations Committee of the Faculties' Association. The whole discussion recalls a story told to Abraham Lincoln. It was reported

to him that an island had been discovered which was made entirely of hard soap. Almost instantly he replied, "Well, it must have taken a good deal of *lye* to make that island." So we say of the big factories which are reported to be manufacturing bogus diploma parchment, and it does seem as if our journals might now be allowed to rest from any more such verbose and inconsequential reports.

No place like New York—an oriole was seen in City Hall Park a few days ago. It was not our Baltimore warbler, however. By the way, is he moulting, or "ducking" We have missed him of late. The game commissioners recently found 6,000 orioles in cold storage, ready for game dinners. Barbarous!

We see a cure for Riggs' disease advertised in the newspapers at fifty cents per bottle. Plenty of people will bite, so you see it pays to advertise. Will it be different some day?

The essayist before the May meeting of the New York Odontological Society was Dr. Eben M. Flagg, well known here twenty years ago, but for some time past located in South America. He is now taking up practice in Philadelphia. Dr. Flagg thinks that dental caries is an eruptive disease; that it is contagious and must be so recognized before any permanent progress can be made for its radical cure; that the usual operations do not eradicate it; and that the dental profession should call the attention of the boards of health, government physicians and medical advisers in general to the great injury which this disease is inflicting on the public, in order that a united effort may be made to eradicate it, and that more stringent sanitary laws shall be enacted.

Dr. A. S Richmond died in this city May 21, aged 58. He was the brother of Dr. C. M. Richmond. It is said that he brought to New York the first piece of bridge-work ever made east of the Mississippi. Dr. Sheffield bought this invention and profited by it until litigation took it from him. We saw this original piece doing service in a patient's mouth, and indorsed the invention publicly before a large meeting at Saratoga.

The *Herald of Light* says, "A sample copy of this paper was recently sent to a gentleman in Illinois, and was returned with this explanation from the postmaster: 'Mr. H— is a banker and has no time to attend to religion.' Perhaps this explains why so many bankers get rich and are enabled to become philanthropists later on in life, and endow homes for worn out dentists, and colleges and libraries, etc." Have any of our readers noticed bankers endowing homes for dentists? It is news to us at any rate.

The New York *Tribune* of June 2 publishes an article and pictures describing pyrography, or the making of pictures on wood by burning the outlines in with a fine flame from a gas blowpipe. Dr. Norman W. Kingsley is the leader in this sort of work, which he took up like many other arts for his own pleasure. Truly he is versatile. Cordially, NEW YORK.

The Dental Digest.

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Editorial.

NATIONAL DENTAL ASSOCIATION.

We would call attention to the notice of the coming meeting of this association which will be found in another column. All arrangements have been made, and everything points to a convention which will probably be the best in the history of the National Association. Milwaukee is central in location and in other respects is an ideal convention city, so we would urge every progressive member of the profession to attend this meeting of the largest and most representative society devoted to our calling. Every regularly organized dental society, local as well as state, is entitled to representation, and we trust all will avail themselves of the opportunity to send a large number of delegates.

"COMPARATIVE TEST OF AMALGAMS IN ACTUAL PRACTICE."

In this issue we publish an article bearing this title and written by Dr. J. W. Cowan of Geneseo, N. Y. We commend his desire to learn more about the filling materials offered the profession, but would make a few criticisms on his methods. In the first place, he was not accurate or careful, as he says, "The alloys were mixed strictly in accordance with the directions which accompanied each package." During the discussion of the paper he was asked whether he had weighed the alloys, and replied, "True Dentalloy is the only one which I weighed, as it is the only alloy where the manufacturers insist on measuring in order to have perfect fillings." The directions on every bottle and package of Fellowship alloy begin: "Mix with the proportions of seven grains of mercury to five of alloy, and if this ratio is carefully secured by weight there will be no surplus mercury."

In the second place, we would criticise his method of packing. He says that the fillings were "thoroughly condensed under pellets

of bibulous paper." To pack slow-setting and easy-working, that is "mushy," alloys under some such agent as bibulous paper is probably as satisfactory a method as can be adopted, for heavy pressure and condensation with an instrument would tend to make them shift, but to pack an alloy that works like Fellowship under bibulous paper is a great mistake, as it cannot be well condensed and forced against the walls of the cavity by such gentle means. Again, slow-setting alloys would probably have to be "finished and polished two days later," but Fellowship should preferably be finished so soon as inserted, before it is set so hard as to make the completion arduous. The poor color of the Fellowship filling was probably due to leakage around the margins, as when properly mixed, condensed and finished no discoloration occurs, nor can the margins be discovered with an explorer.

In the third and last place, we are not surprised that Dr. Cowan failed to obtain so good results with Fellowship as with the slow-setting, easy-working alloy, because, according to his own statement, he has worked almost entirely with "mushy" alloys, and so would not be accustomed to manipulate an alloy which worked directly opposite from them. The clinical value of his experiments is nullified by the fact that he employed three slow-setting, easy-working alloys and one which had exactly the opposite qualities, yet used the same methods of packing with all. However, we are pleased to see dentists making any experiments along this line, for it indicates growth. The profession has too long accepted filling and other materials as to whose qualities they had only the manufacturers' word.

POORLY MANAGED SOCIETY MEETINGS.

In the April DIGEST we made some comments on society work, and suggested methods of improving the efficiency of dental meetings. Since that editorial was written we have attended the Illinois and Tri-State meetings, and would make a few remarks on them. The recent meeting of the Illinois State Dental Society was one of if not the best that has ever been held. It had been well advertised, and an excellent program of papers and clinics was presented, all of which, and the proximity of the meeting-place to Chicago, brought out the largest attendance in years. The meeting was not pushed forward as it should have been, however, so that some

papers had to be read and discussed after most of the members had left. About the only specific criticism which we would make is on the local arrangements. Rockford is one of the prettiest towns in Illinois, and the resident dentists and local committee outdid themselves to make things pleasant for the visitors. Furthermore, they were not to blame in the matter, but the hotel accommodations were utterly inadequate. Several men stayed away, and others came to Rockford but left immediately, because they could obtain no room, and all those who did remain were considerably crowded. A large number of dentists and exhibitors had engaged rooms in advance, but the hotel proprietors simply ignored such reservations and repudiated their written and verbal agreements. There was only one hotel in the town, so the visitors were at the mercy of its management. All of which should teach a large society like the Illinois State never to select as a meeting-place a city which has not ample hotel accommodations.

The Tri-State meeting was probably the largest convention of dentists ever held in the world, it being estimated that over six hundred were in attendance at one time. Consequently, in point of numbers it was a great success. The social features also were all that could be desired. The meeting had been very well advertised, and an unusually good program was arranged, all of which brought a large attendance from not only the three states, but from neighboring ones as well. The value of the educational features of the meeting was greatly lessened by the poor executive arrangements. As many expressed it, "There was no head." The convention hall was utterly unfit for a big meeting because of its poor acoustic properties, as it was impossible most of the time to hear the speakers unless sitting close to them. The presiding officers either did not understand their work or lacked the force necessary to manage the assembly. Knots of men were talking together in the hall during all the sessions, and the discussion was rambling because the speakers were not held to the subject. The greatest trouble, however, came from the fact that the program was entirely too long. Apparently the management acted on the principle that because this was a tri-state meeting there should be three times as many papers as for an ordinary state meeting, and in the effort to have all the papers read the discussions were limited to five minutes. This made it impossible for the papers to be discussed intelligently, and

a large number of men who could have given valuable information on several papers did not have a chance to speak at all. The way to make discussions profitable and interesting is not to limit the time, but to hold each man strictly to the subject. So long as he confines himself to the work in hand and talks intelligently, let him have the floor, but so soon as he rambles, repeats or becomes irrelevant, rule him out. One very important fact seems to be overlooked in all society meetings, namely, that the larger the attendance the less papers there should be. The value of a meeting does not come from the papers themselves so much as from the discussions, for the former simply pave the way for the latter. Papers for a large meeting should be carefully selected, but as a rule quantity and not quality seems to prevail. Half a dozen good papers are all that are necessary for a big gathering, because the larger the meeting the greater the number of those who can and should take part in the discussions. It may well be set forth as an axiom, that "A large attendance calls for a short program."

Notices.

NEBRASKA STATE DENTAL SOCIETY.

At the annual meeting of this organization, held at Omaha last month, the following officers were elected: Pres., H. J. Hill; V.-P., H. A. Shannon; Cor. Sec., F. B. Sherwin; Rec. Sec., W. R. Clarks; Treas., H. T. King.

IOWA STATE DENTAL SOCIETY.

At the annual meeting of this society, held at Clear Lake, May 21–23, 1901, the following officers were elected: Pres., Wm. S. Hosford; V.-P., Frank Fourt; Sec., I. C. Brownlie; Treas., W. R. Clack.

KANSAS STATE DENTAL ASSOCIATION.

At the annual convention of this society, held at Leavenworth May 8–10, 1901, the following officers were elected: Pres., O. H. Simpson; 1st V.-P., E. Bergstresser; 2d V.-P., T. I. Hatfield; Sec., J. W. O'Bryon; Treas., S. J. Renz.

TRI-STATE DENTAL SOCIETY.

At the fourth annual meeting of the Tri-State Dental Society, held at Paducah, Ky., the last week in May, 1901, the following officers were elected: Pres., E. B. Bailey, Ill.; V.-P. for Ind., S. F. Gilman; V.-P. for Ky., C. E. Whitesides; V.-P. for Ill., J. S. Barter; Treas., R. J. Morris, Ky.; Rec. Sec., W. H. Brosman, Ill.; Cor. Sec., C. M. Meade, Ill. The next annual meeting will be held at Fairfield, Ill., May 8–10, 1902.

NEW YORK STATE DENTAL SOCIETY.

At the annual meeting of this society, held at Albany the first week in May, 1901, the old officers were reelected. They are: Pres., J. I. Hart; V.-P., R. H. Hofheinz; Sec., W. A. White; Treas., C. W. Stainton; Correspondent, H. D. Hatch.

TEXAS STATE DENTAL ASSOCIATION.

At the annual meeting of this association, held at Sherman May 16, 1901, the following officers were elected: Pres.. H. L. Pearson; 1st V.-P., J. G. Fife; 2d V.-P., T. P. Williams; Sec. and Treas., B. Jones; member Ex. Com., W. R. Rathbone.

WASHINGTON STATE DENTAL SOCIETY.

The annual convention of this society was held the third week in May, 1901, at Seattle, and the following officers were elected: Pres., B. F. Eshelman; 1st V.-P., F. W. Reese; 2d V.-P., W. A. Fishburn; Sec., F. I. Shaw; Treas., F. R. Fisk.

OKLAHOMA STATE DENTAL ASSOCIATION.

At the annual meeting of this association, held at Oklahoma City, May 9, 1901, the following officers were elected: Pres., G. A. Hughes; V.-P., Dr. Hazen; Sec. and Treas., R. H. Pendleton; Ex. Com., A. M. Detrich; C. D. Coil, J. W. Grant.

LOUISIANA STATE DENTAL SOCIETY.

This organization held a meeting at New Orleans May 7, 1901, and elected the following officers: Pres., R. L. Zelenka; 1st V.-P., M. R. Fisher; 2d V.-P., J. H. Landry; Treas., C. Mermilliod Sr.; Sec., S. P. Magruder; Cor. Sec., A. L. Plough.

ARKANSAS STATE DENTAL ASSOCIATION.

At the annual meeting of this association, held at Little Rock, May 21, 1901, the following officers were elected: Pres., J. M. Flenniken; 1st V.-P., W. T. Cate; 2d V.-P., C. Richardson; Sec. and Treas , E. L. Watson; Cor. Sec., W. C. Gillespie.

TENNESSEE STATE BOARD OF DENTAL EXAMINERS.

This organization will meet at Nashville July 29, 1901, for examination of applicants, who are required to furnish their own instruments and materials for operative and mechanical work. W. H. P. JONES, Pres.
F. A. SHOTWELL, Sec. and Treas.

FLORIDA STATE DENTAL SOCIETY.

The eighteenth annual meeting of this organization was held at Tampa the last week in May, 1901, and the following officers were elected: Pres., C. H. Frink; 1st V.-P., J. L. Tench; 2d V.-P., R. L. McMullen; Treas., L. F. Frink; Sec., J. E. Chace. The next annual meeting will be held at Daytona May 28, 1902.

KENTUCKY STATE DENTAL ASSOCIATION.

At the thirty-first annual meeting of this association, held at Louisville May 14–16, 1901, the following officers were elected: Pres., J. R. Pirtle; V.-P., J. S. Cassidy; Sec., F. I. Gardner; Treas., F. R. Wilder; Board of Trustees, M. H. Dailey, J. M. Hardin, O. G. Gilson.

ALABAMA STATE DENTAL ASSOCIATION.

At the annual meeting of this association, held at Montgomery May 15–17, 1901, the following officers were elected: Pres., C. A. Merrill; V.-Ps., H. D. Boyd, Jr., E. N. Paramon; Sec., S. T. Cook; Treas., W. B. Fulton; Ex. Com., J. C. Wilkerson, D. F. Shakelford, C. L. Boyd.

NATIONAL DENTAL ASSOCIATION.

The fourth annual meeting of the National Dental Association will be held at Milwaukee, commencing Tuesday, August 6, 1901, and continuing four days. The Masonic Temple Hall, which is conveniently located and especially suited to all the various needs of the association, has been engaged. Special railroad rates are being secured and they will be announced later. All regularly organized dental associations are entitled to one delegate for each ten members, and all such organizations are urged to send full delegations. Dr. G. V. I. Brown, Ninth and Wells Sts., Milwaukee, is chairman of the local committee, and will engage rooms at the hotels and answer all questions concerning local arrangements.

A. H. PECK, Sec., Chicago.

ILLINOIS STATE DENTAL SOCIETY.

At the annual meeting of this society, held at Rockford May 14–16, 1901, the following officers were elected: Pres., M. L. Hanaford; V.-P., J. E. Hinkins; Sec., A. H. Peck; Treas., C. N. Johnson; Librarian, J. T. Cummins; Members Ex. Council, J. R. Rayburn, W. E. Holland, J. G. Reid; Member Ex. Com., J. W. Cormany; Publication Com., A. H. Peck, C. N. Johnson, E. Noyes; Member Board of Examiners, E. Noyes; Com. on Dental Science and Literature, G. V. Black; Com. on Dental Art and Invention, H. J. Goslee; Com. on Infraction of Code of Ethics, T. L. Gilmer, A. S. Waltz, O. L. Frazee; Supervisor of Clinics, D. M. Gallie; Com. on Local Arrangements, O. L. Frazee, E. F. Hazell, L. P. Donelan, all of Springfield.

VERMONT STATE BOARD OF DENTAL EXAMINERS.

A meeting of the Vermont State Board of Dental Examiners will be held at the Pavilion Hotel, Montpelier, July 10, 1901, at 2 p. m., for the examination of candidates. The examination will be in writing, and will include anatomy, physiology, histology, bacteriology, chemistry, metallurgy, pathology, therapeutics, materia medica, surgery, anesthesia, operative and prosthetic dentistry, and an operation in the mouth. Candidates must come prepared with instruments, rubber dam and gold. They will also be required to take an impression, articulate and set up a set of artificial teeth. Appli-

cations, together with the fee, $10, must be filed with the secretary on or before July 1.

GEO. F. CHENEY, Secy., St. Johnsbury.

MISSOURI STATE DENTAL ASSOCIATION.

The Missouri State Dental Association will hold its thirty-seventh annual session at Sedalia July 9-12, 1901. A cordial invitation is extended to all reputable dentists to be present and participate in the proceedings. Hotel and railroad rates have been arranged for.

PROGRAM—PAPERS: 1. The Annual Address to the Society by the President, F. F. Fletcher, St. Louis. 2. "Surgical Treatment of Cleft Palate," illustrated with stereopticon, T. W. Brophy, Chicago. 3. "Utilization of Atmospheric Pressure with and without Air Chambers," W. V.-B. Ames, Chicago. 4. "Proof of the Value of Analgesics and Anesthetics in Dental Offices," A. C. Hewitt, Chicago. 5. "The Generation and Administration of Nitrous Oxide Gas," L. W. Nevius, Chicago. 6. "Science and Imagination," E. Bergstresser, Abilene, Kans. 7. "Orthodontia," illustrated by lantern slides, C. B. Lukens, St. Louis. 8. "Diagnosis from a Microscopic or Biological Standpoint," M. D. Hamisfar, Warrensburg. 9. "Our State Law," W. M. Bartlett. 10. "Immediate and Bloodless Removal of Pulp," W. L. Reed, Mexico. 11. "The Painless Separation of Teeth," B. L. Thorpe, St. Louis. 12. "Dentistry as a Fine Art," J. W. Hull, Kansas City. 13. "Detrimental Effects of Soluble Organic Substances in Dental Cements," A. Tschirner, St. Louis. 14. "Some Clinical Experiences in Pyorrhea," M. C. Marshal, St. Louis. 15. "Oral Hygiene," G. H. Gibson, St. Louis. 16. "Habit," H. E. Zorn, De Soto. 17. "Porcelain Work," S. T. Bassett, St. Louis. 18. "Treatment of Pulpless Teeth," Oscar Hammar, St. Louis. 19. Subject to be announced, T. W. Arnold, Butler.

CLINICS—1. (A) "The utilization of atmospheric pressure with and without air chambers." (B) Cement clinic. W. V-B. Ames, Chicago. 2. (A) The Peck method of porcelain inlays. (B) Porcelain crown and bridgework, D. O. M. Le Cron, St. Louis. 3. Filling versus crown, E. Bergstresser, Abilene, Kans. 4. Surgical clinic, T. W. Brophy, Chicago. 5. The "Ideal" base-plate, J. D. Patterson, Kansas City. 6. Banding a Logan crown, T. L. Pepperling, St. Louis. 7. Combination gold and alloy filling at single sitting, A. C. Hewitt, Chicago. 8. Pressure anesthesia for pulp extirpation, W. L. Reed, Mexico. 9. Administration of nitrous oxid gas, extraction, L. W. Nevius, Chicago. 10. Seamless crowns and inlays, O. J. Fruth, St. Louis. 11. Davis crowns, S. C. A. Rubey, Clinton. 12. Richmond crown, N. B. Stanza, St. Louis. 13. A method of taking an impression, J. T. Hull, Butler. 14. Ideal cavity preparation for gold, J. F. Austin, St. Louis. 15. Combination filling—gold predominating, L. E. Jenkins, Fredericks-town. 16. Subject to be announced, D. J. McMillen, Kansas City. 17. Table clinic—The blending of gold and platinum in fillings, A. J. Prosser, St. Louis. 18. Porcelain crowns, E. N. LeVerne, Kansas City. 19. Orthodontia, C. D. Lukens, St. Louis. 20. Extracting molar roots, J. S. Bridgeford, Macon. 21. A method of contouring crowns, W. W. Gardiner, St.

Louis. 22. Gold fillings, H. A. Cress, Warrensburg. 23. A method of packing two colors of vulcanite, S. Williams, St. Louis. 24. Porcelain bridge work, U. S. Hougland, Kansas City. 25. Some new and useful things, A. Tschirner, St Louis. 26. Gasoline blow pipe, J. T. Richardson, Kansas City. 27. Removable root-canal filling with silver wire, P. H. Morrison, St. Louis. 28. Gold filling—Vernon's gold, J. B. Vernon, St. Louis.

F. M. FULKERSON, Sedalia, Chairman Executive Committee.
B. L. THORPE, St. Louis, Secretary.

CHICAGO ODONTOGRAPHIC SOCIETY.

The monthly meeting was held Monday evening, April 15, 1901. Dr. J. N. McDowell read a paper on "The Evil Results of Injudicious Extraction," an abstract of which follows. If a temporary central incisor is lost at the age of four years, the permanent teeth will undoubtedly come through malpositioned for want of space, due to an undeveloped condition of the alveolar process; for at that age only about one-half the crown of the permanent tooth has developed. This half of the tooth is so frail in structure and so deep seated in the process that it is impossible for it to sustain the alveolus at the point where the temporary tooth was removed; so the alveolus at this point collapses and is filled in with osseus structure instead of developing for the accommodation of the larger permanent teeth, and finally the permanent tooth erupts rotated or malpositioned for want of space.

If, on the other hand, at the age of five or five and one-half years (considering that the other parts are normal) the tooth has developed the full crown, it has then come up near enough to the border of the alveolus to sustain its own space and will erupt in normal position. If the teeth, alveolar process and jaws are developing normally and are not acted upon by neurotic condition, temporary teeth can be extracted from one to one and a half years, according to tooth and position, before the eruption of the permanent ones, and the latter will undoubtedly erupt normally. If, however, the development of the teeth and anterior part of the process is hindered by some neurotic condition, in most cases there is not even sufficient room for the permanent anterior teeth, even if the temporary ones are retained until the former make their appearance, and the case requires mechanical assistance. The temporary molars, however, are so much larger than the bicuspids of the permanent set that if they are extracted from one to two years before, there is still sufficient space for the eruption into normal position of the bicuspids. If, however, there is abnormal development of the process, the extraction of the temporary molar one year or six months before the time of eruption of the permanent teeth may cause the process to collapse, which calls for mechanical assistance to aid proper eruption of the bicuspids.

There is one sure sign that the alveolar process in holding the temporary incisor is developing normally for accommodating the large permanent teeth, and that is when the upper and lower temporary incisors begin to separate about the age of five or later. This separation or development of the alveolar process goes on until nature has prepared sufficient room for the

eruption of the larger anterior teeth. The temporary incisors stand apart from 1 to 1½ millimeters, which proves that when the arches are developing normally they do not need contact to sustain them in position at this stage. The extraction of the temporary incisors at such age would have no perceptible effect upon the eruption or position of the permanent teeth, for by the natural physiological development the process is being properly enlarged for their accommodation.

Extraction of the permanent teeth, that so often wrecks the harmonious relation of the arches, is usually confined to the distal teeth. There may be cases occasionally where extraction of one or two of the permanent teeth is necessary as a result of arrested development of one or both arches, crowding the teeth to such extent that to align them would be to destroy the facial appearance by bulging out the lips. When teeth are extracted in children the space may or may not close in a few years, but the inharmonious relationship of the arches has been established and it becomes necessary to remove a tooth in the opposite arch, or to enlarge the arch and replace with artificial teeth, to harmonize the conditions.

Often the question arises, if a tooth is extracted in one arch is it necessary to extract in the other? The causes of extraction are: First, where there is a crowded condition after maturity and where alignment would only disfigure the features. Second, from the delayed eruption of a tooth. Third, where from previous extraction of a tooth from one of the arches, it may also be necessary to extract in the opposite arch to harmonize the condition. As a rule cuspids should not be extracted. In the lower arch, if the inequality is confined to the anterior teeth as the result of a delayed eruption of a cuspid, extract the lower incisor, one that will favor the condition. The removal of the tooth favors the movement of the other incisor forward. Fourth, if in case of acute disease one is compelled to suffer the loss of a tooth, it is best that the space should be preserved by artificial teeth for the sake of mastication, harmony of the arch, and as a preventive against future movement of the teeth.

Discussion. Dr. T. W. Brophy was of the opinion that cases were rare in which the loss of a cuspid was justifiable. He quoted Dr. L. P. Haskell—"When all the other teeth have been extracted take out the cuspids." Dr. Brophy put great stress on the influence that pressure of the lips might have on the teeth. He sometimes deemed it advisable to remove permanent teeth, and had four bicuspids removed from the mouths of his own children, as it aided in preserving the other teeth.

Dr. C. S. Case said that nature would do more than we imagined in a great many instances when not interfered with. In regard to the injudicious extraction of permanent teeth he made two divisions: First, accidental or inadvertent. Second, through lack of judgment or ability. In one case he inadvertently extracted the bicuspids to deflect cuspids for the benefit of coming cuspids. This later proved to have been uncalled for, as an examination with the X-ray showed there were no incisors. As an example of the second case, he referred a patient to a specialist for extraction, having marked the lower bicuspids on card, and the specialist, holding the card

upside down, extracted the uppers. Dr. Case insisted that it was not sufficient to rely entirely upon the relations of the arches. One must consider the influence of the teeth upon the unchangeable part of the features. Either let the teeth alone, or do not extract unless you are certain to get fullness of features. The usual cases of irregularity are those in which cuspids have no room to erupt.

Dr. J. P. Buckley then read a paper entitled "The Chemistry of Pulp Decomposition, Causing Discoloration of the Teeth; and the Applied Chemistry of Bleaching Teeth, Restoring the Original Color," a resume of which follows: The products formed in the decomposition of nitrogenous organic bodies, such as are found in the pulp tissue, are water (H_2O), carbonic dioxid acid (CO_2), acetic acid ($HC_2H_3O_2$), ammonia (NH_3), carbureted hydrogen (CH_4), and semi-putrid substance; and since there is a small amount of sulphur found in the pulp-tissue, some of the hydrogen evolved in its decomposition undoubtedly unites with this element (S), forming hydrogen sulphid (H_2S).

Dr. Buckley agreed partially with Dr. A. H. Peck, who said that the discoloration was due in all probability to ferrous sulphid, but objected to his chemistry of producing this substance, as Dr. Peck stated that the iron was set free in the breaking of the red blood corpuscles. The essayist said that in the presence of the other products of the decomposition it could remain free only an instant and should not be so considered; that in the decomposition of the blood the hemoglobin was broken up which contained the iron, and salts of this metal were produced other than the sulphid. The statement that ferrous sulphid was produced by the action of hydrogen sulphid on iron he also questioned, as it was a known fact that ferrous sulphid could not be precipitated from either the ferric solutions by an *acid* reagent such as this gas (H_2S); and he did not believe a reaction possible within the tooth that we could not verify in the laboratory with the same reagents.

Dr. Buckley stated further that since ammonia was far in excess of hydrogen sulphid in the by-products formed in the decomposition of the pulp-tissue, and had the property of uniting chemically with water, which was always present, forming a reagent, ammonium hydroxid, that would at once precipitate the salts of iron, would it not be more plausible to attribute the discoloration of a tooth from this cause largely to the formation of ferric hydroxid rather than ferrous sulphid? But even admitting that this latter substance caused the discoloration, it could be formed only by the hydrogen sulphid acting on the ammonia, producing ammonium sulphid $(NH_4)_2S$, $-2NH_3+H_2S$ $(NH_4)_2S$; and this alkaline reagent would always precipitate the salts of iron. And in all likelihood a small amount of ferrous sulphid was produced in this way.

Dr. Buckley's conclusion was that the discoloration was due in all probability to the formation of ferric hydroxid and ferrous sulphid, both being dark substances and formed according to the reactions above explained. The ferric hydroxid is a reddish brown substance, and when mixed with only a small amount of black ferrous sulphid makes a mixture of dark appearance, in fact, almost black in color. It appeared to him that the

other gases which were generated in the process of decomposition caused a pressure which forced this dark mixture into the partially empty tubuli, causing the discoloration. He mentioned in this connection that it was perhaps the pressure caused by these gases which forced some of the infectious material through the apex of the teeth into the soft tissues, causing the abscess from this class of teeth.

Dr. Buckley reviewed the various methods employed in bleaching teeth, and stated that with the exception of oxidation they had been unsatisfactory. Oxidation was either direct or indirect. In the indirect method no matter what chemicals were used the by product was hydrochloric acid, a coagulator of albumin. This virtually cooked the semi-decomposed material within the dentinal tubuli, forming a mechanical obstruction, which made it almost impossible to thoroughly remove the oxidized coloring matter. In the direct method, solutions of pyrozone had been advocated. This is an instantaneous coagulator of albumin and should be discarded on the same ground as the indirect method. Teeth bleached by either of these methods almost invariably darkened after the final filling was inserted.

Dr. Buckley from a chemical view point considers sodium dioxid to be the correct agent to employ in the bleaching of discolored teeth. It is a yellowish-white powder which is formed when sodium is allowed to burn briskly in dry air or oxygen, and is recommended to be used both dry and in solution. Chemically considered, a solution of sodium dioxid in water cannot be made any more than can a solution of sodium chlorid be made in sulphuric acid (H_2SO_4). Water is a positive and instantaneous decomposer of sodium dioxid. That is to say, they act chemically upon each other, and the result of this action depends solely on the way the powder has been added to the water. If added slowly, the sodium dioxid unites with the water, forming a solution of sodium hydroxid and hydrogen dioxid,—$Na_2O_2+2H_2O=2NaOH+H_2O_2$. The hydrogen dioxid will bring about the bleaching and sterilization, while the sodium hydroxid is a valuable adjunct. While good results are obtained by using sodium dioxid both dry and in solution, the best results for bleaching purposes are obtained by bringing about the latter reaction, which of course would necessitate putting the dry powder into the cavity and pulp-chamber of the tooth to be bleached and adding distilled water to the powder. When the dry powder is placed in the cavity or pulp-chamber and comes in contact with organic tissue which always contains water, or if moistened with water in any way, the sodium is at once decomposed and sodium hydroxid and ozonized oxygen oxidize the coloring matter as in the other methods of bleaching, but performs the work more energetically; while the by-product, sodium hydroxid, instead of coagulating the partially decomposed or semi-putrid substance within the tubuli, causing a mechanical obstruction, saponifies the fats and allied tissue, forming a soap which is soluble and which can with care be washed out of the tubuli with hot water, mechanically bringing with it the insoluble oxidized coloring material. After having saponified and removed the semi-putrid substance and remaining fibrils in the tubuli, thereby obviating the possibility of its becoming coagulated by the presence of an acid, a diluted solution of sul-

phuric or hydrochloric acid may with safety be employed. The diluted acid can now enter the tubuli and unite chemically with the oxids that may not have been mechanically or otherwise removed by the saponification and removal of the semi-putrid substance. The salts produced by the action of these acids are freely soluble and can readily be washed out by the use of warm water.

Dr. Buckley must be credited with being the first to employ calcium phosphate to fill the mouths of the tubuli of the teeth after bleaching. This is a fine white powder, practically insoluble and certainly compatible, it being the substance of which the teeth are largely composed. Experimenting with it Dr. Buckley found that it could be made into a paste with cold water, and when put into a cavity, and alternating with hot air from chip-blower and rotating pressure with round burnisher, was easily compressed and became quite hard. Some writers had advocated the use of the so-called oxychlorid of zinc cement; others had mentioned balsam varnish to be used in connection with this; but these substances did not seem to fill the requirements. By carefully drying and burnishing a paste of precipitated calcium phosphate against the exposed dentin, a base against which to pack the gold in filling could be made by zinc phosphate cement without danger of causing the tooth to rediscolor.

Dr. J. E. Hinkins in opening the discussion complimented the author and stated that the paper was based on the chemistry of to-day, and that its application to dentistry was original with the essayist. H_2S acting on hemoglobin was formerly thought to be the principal cause of discoloration of the teeth. Dr. Hinkins believed that the best method of overcoming the discoloration was by direct oxidation. Several years ago he read a paper advocating the employment of oxalic acid which gives practically the same reaction. He did not believe in the coagulation of albumin of the teeth, as he and others had made exhaustive experiments and had arrived at the conclusion that there was but $\frac{1}{10}\frac{1}{000}$ to $\frac{1}{8}\frac{1}{000}$ per cent of albumin in tooth structure. He concluded by stating that secondary discoloration of the teeth was probably due to the osmotic action of the circulation of the blood, producing oxidization of the iron in hemoglobin.

Dr. A. W. Harlan disagreed with Dr. Hinkins in regard to amount of albumin in the teeth, and did not believe that the theory of the essayist could be accepted by chemists. He employed dry peroxid of sodium in bleaching, and claimed that it aided in discovering openings of the tubuli. He spoke of the technique of bleaching various substances, such as feathers, wool, ivory, bone, etc., and stated that as early as 1797 those engaged in wool-bleaching noted that the discoloration was due to the oxidation of iron. Further, bleaching could also be accomplished by the action of the electric current on sodium chlorid—indirect method. He credited the essayist with being the first to employ precipitated calcium phosphate in this connection.

Dr. A. H. Peck had prepared a rather lengthy discussion of the paper, but did not read it owing to the lateness of the hour.

Dr. Buckley in closing stated that he did not claim that teeth contained

albumin. He referred to a semi-putrescent substance, composed mostly of fat. The first action in bleaching by the method advocated by the essayist was of acid reaction; later of an alkaline reaction which produced saponification. This readily permits the removal of decomposed substances by means of water.

News Summary.

A. S. HENSON, a young dentist of Dowington, Pa., died May 9, 1901.

W. S. PROVAN, a retired dentist at Dorchester, Mass., died May 28, 1901.

ELMER C. GOLDTHORP, a dentist of Englewood, Chicago, died May 18, 1901.

E. D. ANDRUSS, 59 years old, a dentist at Seattle, Wash., was drowned May 19, 1901.

DALTON TRUMBAUER, 36 years old, a dentist at Coopersburg, Pa., died May 15, 1901.

C. A. POOLER, formerly a dentist at Frankfort, N. Y., died May 17, 1901, aged 45 years.

PARTING PAINFUL.—The parting that generally gives us most pain occurs in a dental chair.

SAMUEL L. BENSON, 64 years old, a dentist at New York City, died June 1, 1901, from pneumonia.

LEWIS A. RHODES, 73 years old, a dentist at Norwich, N. Y., died May 3, 1901, from heart disease.

JAMES R. BOYD, 54 years old, a dentist at Waukesha, Wis., died May 17, 1901, from Bright's disease.

MEDICO-CHIRURGICAL COLLEGE OF DENTISTRY held its annual commencement exercises May 25, 1901, and graduated 25 students.

NEW YORK COLLEGE OF DENTISTRY held its thirty-fifth annual commencement exercises May 13, 1901, and graduated 47 students.

MOIST GANGRENE.—Dr. Raneletti recommends formalin in order to prevent mummification and loss of tissue.—*Med. Summary.*

UNIVERSITY OF MINNESOTA COLLEGE OF DENTISTRY held its annual commencement exercises June 6, 1901, and graduated 31 students.

UNIVERSITY OF BUFFALO DENTAL DEPARTMENT held its tenth annual commencement exercises May 14, 1901, and graduated 65 students.

J. L. BARNES, formerly a dentist at Lockport, Ill., died at the Jacksonville Insane Asylum last month. His wife is accused of poisoning him.

GEORGE S. NASON, a young dentist of Omaha, Neb., shot and killed himself May 23, 1901. He was a son of A. W. Nason, who has practiced dentistry in Omaha thirty years.

LAKE ERIE DENTAL ASSOCIATION, in session at Bradford, Pa., May 9, 1901, elected the following officers: Pres., C. M. Brooks; V.-P., C. T. Felt; Sec., C. D. Elliott; Treas., J. H. Heivly.

TRAVERSE CITY (MICH.) DENTAL SOCIETY was organized May 28, 1901, and the following officers were elected, Pres., E. L. Ashton; V.-P., G. A. Holliday; Sec. and Treas., W. J. Higgins.

DULUTH-SUPERIOR DENTAL ASSOCIATION held its first annual banquet May 11, 1901, and elected the following officers: Pres., W. C. Minier; V.-P., S. R. Holden; Sec. and Treas., S. E. Cathero.

CARL FISCHER, a dentist at Zanesville, Ohio, was adjudged insane May 29, 1901. He ran for mayor, but was so hopelessly defeated that the humiliation and the gibes of his friends unbalanced his mind.

CONVICTS UNFORTUNATE.—The Missouri State Board of Dental Examiners met at Jefferson City May 14, and applicants for license performed dental operations on the convicts of the state penitentiary.

BILL CAUSES COURT MARTIAL.—According to the *Baltimore Sun*, a dentist's bill for fifty dollars is responsible for the court-martial of a captain in the United States Navy, which was begun June 3, 1901.

NERVOUSNESS CAUSES DEATH.—A man at Rockford, Ill., dropped dead May 20 as he was about to sit down in a dentist's chair, and it is believed that nervousness over the coming operation caused his death.

SUSQUEHANNA DENTAL SOCIETY last month elected the following officers: Pres., B. M. Crary; V.-P., C. C. Walker; Rec. Sec., T. W. Thomas; Asst. Sec., Nellie Carle; Cor. Sec., N. Keiser; Treas., J. C. Hertz.

RESIDENCE NECESSARY TO PRACTICE.—The attorney general of Utah has given an opinion that the state board of dental examiners cannot issue certificates or licenses to practice to dentists who do not locate in the state.

MAHONING VALLEY DENTAL ASSOCIATION was organized at Youngstown, O., last month with the following officers: Pres., W. H. Whitslar; V.-Ps., David Gibbons, N. B. Acheson; Secy., R. D. Morgan; Treas., H. E. Dunn.

WESTERN DISTRICT DENTAL SOCIETY was reorganized at Pittsfield, Mass., May 14, 1901, and the following officers were elected: Secy., W. D. Hill; Treas., M. W. Flynn; Ex. Com., J. J. McLaughlin, E. E. Vadnais, A. W. Gabeler.

WILLIAM HENRY MORGAN, 84 years old, one of the oldest and most prominent dentists in this country, died at Nashville, Tenn., May 16, 1901. He was active in college and society work and had held the highest offices in both.

COCAIN CAUSES DAMAGE SUIT.—A woman at Kokomo, Ind., has sued her dentist for $5,000 damages, claiming that he administered cocain while pulling her teeth, and that a quantity of it went down her throat, causing poisoning.

SWINDLER FLEECES DENTISTS.—The police departments of various cities warn physicians and dentists throughout the country to beware of a young man who claims to take subscriptions for various magazines. He makes an astonishingly low rate on a clubbing proposition and collects four or five dollars, but the magazine never arrives.

UNIVERSITY OF CALIFORNIA DENTAL DEPARTMENT ALUMNI ASSOCIATION elected the following officers May 16, 1901: Pres., F. G. Baird; V.-P., J. A. Jeffrey; Rec. Sec., C. H. Bowman; Cor. Sec., W. M. Herrington; Treas., H. G. Allen.

LEBANON VALLEY (PA.) DENTAL ASSOCIATION held its twenty-sixth annual session May 21, 1901, and elected the following officers: Pres., A. S. Koser; V.-P., K. Tate; Rec. Sec., H. J. Herbein; Cor. Sec., P. K. Filbert; Treas., C. B. Wagner.

CIGARETS, ETC., HIS DOWNFALL.—Charles Gilson, a dentist of New York City, addicted to cigarets, morphin, whisky, etc., has been placed in the alcoholic ward of a hospital. His mother states that he used from 70 to 100 cigarets a day.

CENTER OF POPULATION AND OF AREA.—According to the census of 1900, the center of population at present is six miles southeast of Columbus, Ind. The center of area of the United States, excluding Alaska, Hawaii and other recent accessions, is in northern Kansas.

SWINDLER PUNISHED.—A negro dentist at Atlanta, Ga., has been sent to jail for two years for swindling negro residents of the city. After agreeing to put in false teeth, he would extract the natural ones, also his fee, and then be lost to sight though to memory dear.

HEMORRHAGE CAUSES DEATH.—A man at Sharon, Pa., 61 years old, died recently from hemorrhage following the extraction of two teeth. Four weeks elapsed before his death, and, although every known remedy was tried, it was impossible to stop the flow of blood.

FILLED THE EDITOR.—"Dr. Bridwell, the well known dentist, put in a filling the other day that was certainly all right. He filled a couple of boxes with some fine strawberries of his own raising and left them on the editor's desk. "Doc" is all O. K.—*Metropolis (Ill.) Jour.*—Rep.

SATURDAY CLOSING.—The dentists of Lake Geneva and Janesville, Wis.; Rock Island, Ill., and Davenport, Iowa, have agreed to close their offices at one o'clock Saturday afternoons during June, July and August. We trust their example will be followed by the profession generally.

SOUTHERN WISCONSIN DENTAL ASSOCIATION held its annual meeting May 21–23, 1901, and elected the following officers: Pres., G. W. Snyder; 1st V.-P., T. Maxwell; 2d V.-P., J. J. Wright; Sec., J. H. Read; Treas., W. G. Hale. The next meeting will be held at Beloit in May, 1902.

SPITTOON CAUSES DAMAGE.—A dentist at Spokane, Wash., forgot to shut off his fountain spittoon when quitting work for the night. Some absorbent cotton clogged the waste-pipe and the water flooded a clothing store on the floor beneath, causing damage amounting to several thousand dollars.

NOISY TOOTH-PULLER SUPPRESSED.—Some months ago a man claiming to be a dentist arrived at Chattanooga, Tenn., and stated that he had discovered a new method of extracting teeth. Every evening he lectured on his skill and pulled teeth at a prominent corner, but the merchants of the neighborhood had him arrested, and the court abated him as a public nuisance.

CURE FOR TOOTHACHE FAILS.—A man in Pennsylvania recently undertook to burn out the pulp of a decayed tooth by inserting a match head in the cavity and then setting it off with a heated wire. His mouth was frightfully burned, but a dentist fixed him up and removed the aching member.

FINGERS INSTEAD OF FORCEPS.—A dentist of Indianapolis thinks forceps are relics of barbarism, and believes they will be abandoned before many years. He claims to be able to pull teeth with his thumb and finger just as quickly, efficiently and with less pain than any operator can do with forceps.

MUSIC HATH CHARMS.—Dr. Laborde, of Paris, claims that by attaching the tubes of a phonograph to the ears of a patient undergoing anesthesia pleasant dreams are substituted for the usual nightmare. We do not believe there is anything new about this method, as dentists in this country have often used music during anesthesia.

MUMPS —Fred Tresilian states that generally the opening of Stenson's duct on the inner surface of the cheek outside the second upper molar is hard to discover in children; in many cases of mumps which he has observed it was a bright red papilla, and lasted as such for a week or more. Salivation also occurred in many cases.—*Med. News.*

CHRISTIAN SCIENCE FAILS ON BOY.—A woman in England, a leader in Christian Science circles, tried to cure her little boy's violent toothache by Christian Science methods, telling him his pain was only a delusion, etc. After standing the youngster's yelling for two days the father took him to a dentist, who extracted the aching tooth.

WISCONSIN STATE BOARD AGAIN ON THE WARPATH.—A graduate of the Wisconsin College of Physicians and Surgeons has begun mandamus proceedings to force the Wisconsin State Board of Dental Examiners to recognize his diploma granted by that institution. The board claims that the school in question does not come up to the required standards.

APHTHOUS STOMATITIS.—M. Gabriel. Arthaud (*Progres Med.*) describes scarlatiniform eruption which accompanies acute aphthous stomatitis. It may be hemorrhagic or erythematous in character, or appear as opalescent pustules, the miliary form. It is accompanied by a high temperature with slight morning recessions. It covers the entire body or may be limited to the mouth and mucous membranes.

"BONIFIED" OSTEOPATHY.—"William Hartford, a graduate under Andrew T. Still, the founder of Osteopathy, has located . . . at Champaign, Ill. He does not pretend as having graduated from the great colleges in Europe and America, for such a thing is disgusting to an honest and meaning people, but he does claim that he is the only bonafied osteopathist in Champaign county and is perfectly willing to substantiate what he says."—*Farmer City* (Ill.) *Sun.*

"SING A SONG OF PENITENCE, a fellow full of rye, four and twenty serpents dancing in his eye; when his eyes were opened, he shouted for his life; wasn't he a pretty chump to go before his wife? His hat was in the parlor, underneath a chair; his boots were in the hallway, his coat was on the chair;

his trousers in the kitchen, his collar on the shelf; but he hasn't any notion where he was himself. When the morn was breaking, some one heard him call—his head was in the ice box, which was the best of all."

URANIUM RAYS TO ENHANCE EFFECT OF X-RAYS.—By E. Grunmach. A screen of fine linen is impregnated with a solution of uranium—the source of the Becquerel rays—and suspended between the vacuum tube and the subject at a point where the X-ray must pass through it. The shadows cast on the fluroscope are much clearer and more distinct, and the contrasts are sharper than by any other technique. The finished actinograms are likewise exceptionally distinct, even with obese subjects.—*Dent. Med. Woch., Jour. A. M. A.*

MECHANICAL OR SURGICAL.—A man in St. Louis carried an accident insurance policy which did "not cover medical or surgical treatment, etc." The holder had a tooth extracted and his jaw was accidentally broken. The company refused to indemnify him, claiming that he had undergone surgical treatment, but when suit was brought the judge decided that the insurance company would have to pay, as the extraction of a tooth was mechanical and not surgical. There is no similar case on record, so this decision probably establishes a precedent.

MORE ILLEGAL PRACTICE.—Two dentists at Toledo, Ohio, were arrested recently for practicing dentistry without a license. Four in Pittsburg, three in Altoona, Pa., and two in Springfield, Mass., have been arrested on the same charge. It is said that a large number of arrests will follow throughout Pennsylvania, as the state dental society is after all illegal practitioners. The dentist at Scranton, Pa., who was arrested some weeks ago on the same charge as the above and found guilty, has had his request for a new trial refused, so the verdict will stand.

REMEDIES FOR TOOTHACHE —A woman in Philadelphia had toothache recently, and upon advice of interested relatives and friends tried the following remedies: Hot salt water; 4 per cent solution of cocain; creosote; oil of cloves; belladonna liniment; toothache wax; toothache plaster; ice; hot hops; hot water-bag; laudanum; valerian; chloroform liniment; phenol sodique; baking soda; arnica; toothache drops; ether spray, and finally the forceps at the hands of a strange dentist. Her own dentist subsequently discovered that she simply had neuralgia and that the tooth might have been saved.

SUGGESTIONS ON USE OF HYPODERMIC SYRINGE.—Drop a small piece of absorbent cotton into the fluid to be drawn into the syringe. Press the syringe against cotton and syringe will be filled with a filtered solution; no specks to stop, and less risk of after-irritation at the point of puncture. Hold the syringe so that the beveled surface of the needle's point shall be firmly pressed against the skin. If the syringe is held at a right angle, the least puncture of the mere point of the needle will permit the fluid to pass under the scarf skin on a firm pressure of the piston. A white spot marks the success of dose. We have thus caused the least pain. If slowly and carefully done no pain is felt. The tissues are wounded the least and ab-

sorption is hastened. Always hold syringe so that the needle points outward, and on having introduced a mere drop wait a few seconds for a sedative effect on the tissues, then slowly push the piston home. If the needle becomes stopped, introduce the wire at point of needle, as the plug can be forced more easily in the direction from which it came. If the needle be stopped by a vegetable substance, hold the needle in flame of gas or lamp and the plug will burn out.—*Dental Office and Laboratory.*

COMPOSITE ODONTOME.—By Mr. Vincent Cotterell (*Dental Record*). This was removed from a girl nine years of age. The patient had a swelling on the left lower jaw, not painful but unsightly. She had not cut her first lower molar, and at the angle of the jaw something hard could be felt, the shape and size of the crown of a molar. He sent her to a surgeon, who sent the patient back to have the neighboring teeth taken out, and on June 25 he removed the first and second temporary lower molars He saw the patient again several times, and on Oct. 4, 1893, about five years after first seeing the patient, he removed three first molars. In 1897 he did some fillings, and by that time the jaw had swollen much more and pus was coming from a sinus where the left first molar ought to have been. On June 6, 1900, he again saw the patient and sent her to a surgeon, who made a large incision inside and got away a quantity of pus, but could not find a tooth, and the operation did not disclose the odontome. On Oct. 24 last the patient came to have a third molar extracted, and while waiting for the anesthetist he examined the mouth and felt the crown of the supposed third molar with a probe, and found that it was slightly soft. Gas and ether were administered, and after an operation of three or four minutes the composite odontome came away.

PROOF OF ACCOUNT IN ACTION AGAINST ADMINISTRATOR.—In the case of Garwood vs. Schlichenmaier, administrator, the Court of Civil Appeals of Texas has reversed a judgment for $150 for medical services. The plaintiff physician had testified, among other things, that he had treated the patient for epilepsy during a certain period of about two months, nearly every day, or sometimes every two or three days; that he wrote prescriptions for him frequently, and gave him medicine in his office. The court holds that this was inadmissible on account of being testimony with reference to a transaction with the intestate, within the meaning of the state statute providing that in an action against an administrator neither party shall testify as to any transaction with the decedent, unless called as a witness by the opposite party. In other words, it would seem that under such a statute a physician is incompetent to prove his own services as such to the decedent, against the representative. If, however, the performance of the services has been proved otherwise, when so proved, the plaintiff, the court says, it would seem, may testify as to the value. Nor does it consider that an account by a physician for his services is such a one as can be proved under the provisions of a statute making a verified open account prima facia evidence of the debt. The word "account" in that connection, it holds, applies to transactions between persons in which, by sale upon the one side and purchase upon the other, the title to personal property is passed from one to the other, and the relation of

debtor and creditor is thereby created by general course of dealing. So it holds that the only purpose for which a physician's account is admissible in evidence in such a case as this is to show that it has been properly verified as a claim against the estate of the decedent, and that it has been rejected by the administrator, and that it is error to admit it in evidence for any other purpose.—*Jour. A. M. A.*

PAIN RELIEVED BY SUPRARENAL EXTRACT. By Dr. E. A. Peters.—The author reports four cases which show that the application of a suitable suprarenal extract may be of great benefit in allaying the pain of cancer and other forms of recurrent inflammation without any apparent deleterious effect. In one case of recurrent scirrhus of the mamma, with great pain in the growth, painting with ten per cent suprarenal lotion relieved the pain almost entirely. A case of painful stricture of the esophagus was benefited by the patient's sipping the same lotion; used as a spray in a case of tuberculosis of the larynx, the throat was rendered free from soreness for some hours. In the last case, one of periodontitis, pledgets of wool soaked in the ten per cent suprarenal lotion and placed between the lip and the gum, gave great relief.—*Lancet.*

THE MODERN DOCTOR'S EDUCATION.

When he was twenty-five years old our doctor graduated,
And men of commonplace ideas pronounced him educated;
But he took three years of travel to learn the new pathology,
To study skin in old Vienna and Koch's bacteriology,
Then came a hard post-graduate course which took him three years longer;
Then though his health was very poor, his intellect was stronger,
His physical condition now approached emaciation,
His fraters ordered two years' rest for his recuperation.

Then polyclinics, it took three years their mysteries to unravel,
And then to study foreign modes, three more long years for travel.
When he returned his big moustache with long gray hairs was threaded,
He'd lost his eyesight long before, and now was quite bald-headed.

When he was thirty-nine years old our intellectual giant
Hung out his little shingle, and then waited for a client.
The girl he loved in former days had long since wed another,
And had grown a portly matron and an excellent grandmother.

The boys he knew in grammar school seemed ancient as progenitors,
And one was governor of the state and two of them were senators;
But seated in his office, in retired sequestration,
He waited long for patients with their tales of inflammation.

One day when he was forty-five, came in his earliest client,
John tried to be as quiet as the poetry of Bryant;
But the shock it came so sudden, with such overwhelming power,
That he fell with apoplexy, and died within an hour.

—*Western Medical Reporter.*

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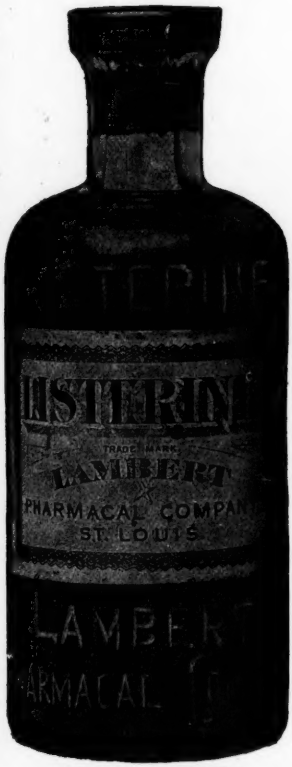
Special Notice to the Dental Profession.

Listerine

in the

Original Package



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3-oz. Size—LISTERINE—Price 25 cents.

WE beg to announce that, in addition to the regular size 14-oz. bottle in which LISTERINE is offered to the trade, a smaller package, containing **three ounces** is now placed upon the market; the consumer of LISTERINE is thereby enabled to purchase, under the seal and guarantee of the manufacturer, even the smallest quantity likely to be required.

Wholesale druggists throughout the United States are prepared to promptly supply Pharmacists with the new size LISTERINE.

Lambert Pharmacal Company, St. Louis.

"THE IDEAL ANTACID"

A SEVERE TEST.

Take a Little *Dentscura* TRADE MARK

(about the size of a large pea) and upon your wash-stand slab make an emulsion of it by rubbing in a little water. Then dip a piece of **blue** litmus paper into a weak solution of hydrochloric, or sulphuric acid. Of course the paper will turn immediately **red.**

Now lay this *acid-soaked* paper upon the slab, and with your fingers lightly wash or rub it with the **DENTACURA** emulsion.

You will at once perceive that the paper *will gradually return to its original color*, or even to a deeper **blue.** Now, test the paper again with the acid solution and you will find that it will perceptibly *resist the acid.*

This test conclusively proves that **DENTACURA** not only neutralizes the acid, but transforms an acid condition into an alkaline one.

The same condition will be brought about in the mouth by the use of **DENTACURA.**

DENTACURA is not only an *effective* **antacid,** but is also a most *argreeable* **antiseptic dentifrice.** It will be used faithfully and systematically by patients, where all other remedies will be utterly neglected.

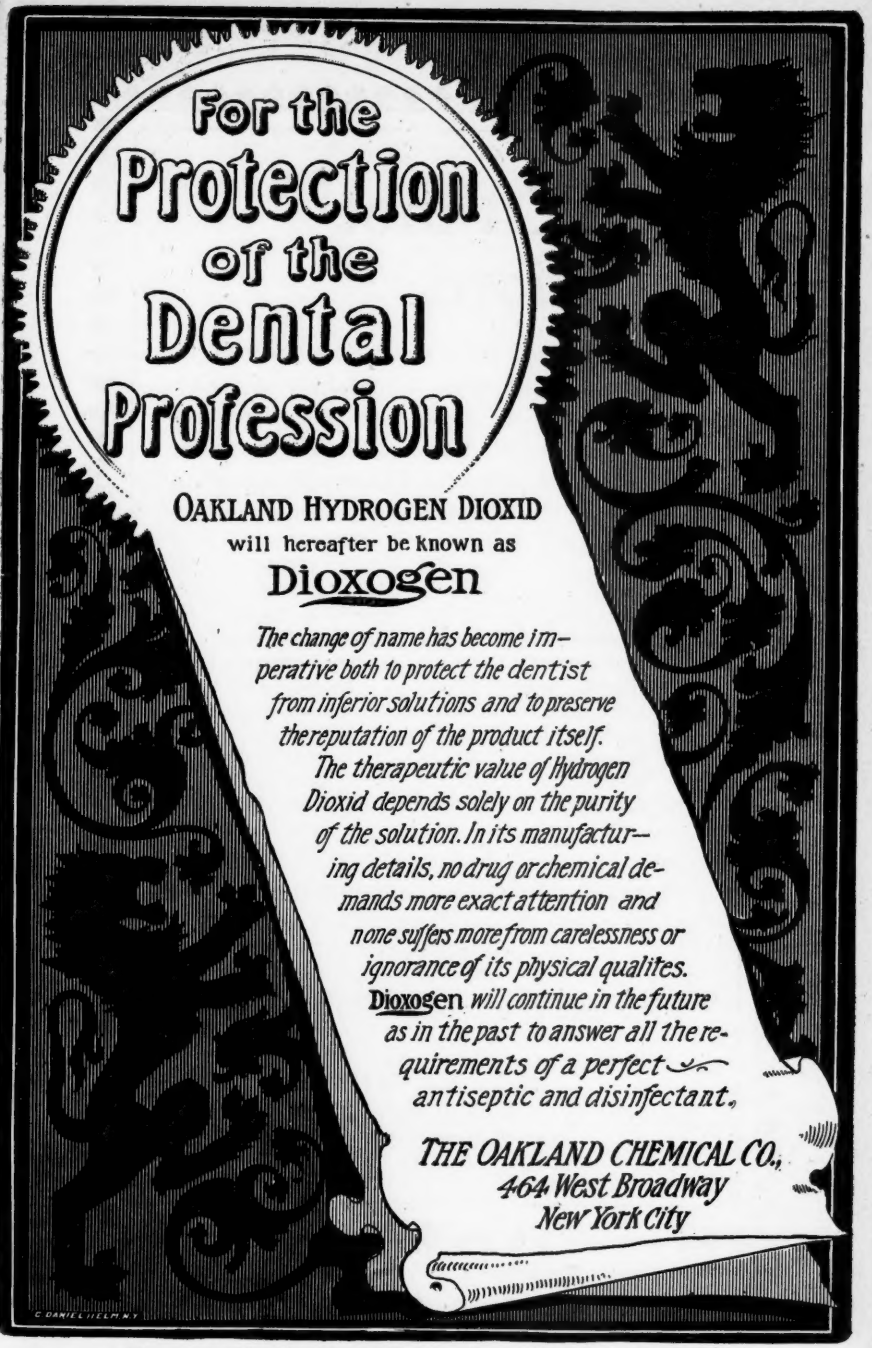
As an **adjuvant** in the treatment of **Acid Erosion, Pyorrhea, Stomatitis, Etc., Etc.,** DENTACURA works wonders.

Have You Tried It? If Not, Why Not?

If you want to test it SAMPLES are yours for the asking.

DENTACURA CO.,
Newark, : : : : N. J.

See last and next month's advertisement.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The change of name has become imperative both to protect the dentist from inferior solutions and to preserve the reputation of the product itself.
The therapeutic value of Hydrogen Dioxid depends solely on the purity of the solution. In its manufacturing details, no drug or chemical demands more exact attention and none suffers more from carelessness or ignorance of its physical qualites.
Dioxogen will continue in the future as in the past to answer all the requirements of a perfect antiseptic and disinfectant.
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You Cannot Afford,

in justice to your patient as well as yourself, to prescribe a mouth-wash the analysis of which proves it to be deficient in antiseptic properties.

Comparative tests made at the Northwestern University Dental School, Chicago, demonstrate the superiority of **SANITOL** over all similar preparations.

Sanitol	is antiseptic in 1 to 88 parts	
Borolyptol.....	20 gtts..	Slightly antiseptic
Pasteurin	20 gtts..	Slightly antiseptic
Wampole's	20 gtts..	Slightly antiseptic
Glycothymolin ...	20 gtts.....	Not antiseptic
Zymocide	20 gtts.....	Not antiseptic
Benzolyptus.....	20 gtts.....	Not antiseptic
Borominthol	20 gtts.....	Not antiseptic
Listerin	20 gtts.....	Not antiseptic
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When you prescribe an antiseptic mouth-wash prescribe the best. There is but one *best*—

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Manufacturers of Sanitol Tooth Powder, Sanitol Tooth Paste, and the Sanitol Tooth Brush.